



**TETRA TECH EM INC.**

1225772 - R8 SDMS

February 15, 2012

John Podolinsky  
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Subject: Transmittal of the Final 2010 Remedial Investigation Report for Operable Unit Number 7 of the Libby Asbestos Superfund Site  
DEQ Contract 407026; Task Order 77

Dear John:

Tetra Tech is pleased to submit the Final 2010 Remedial Investigation Report with your comments incorporated. The document is also being submitted to the EPA and Libby Technical Advisory Group as stated in the scope of Work. In addition, a PDF version will be sent to the EPA for posting to the EPA Libby Superfund Site web site.

Tetra Tech appreciates the opportunity to work with you and the DEQ Remediation Division on this important project. If you have any questions, please call me at 441-3268.

Sincerely,

Kathryn Norris  
Project Manager

cc: Victor Ketellapper, US EPA (1 CD, 1 Hard Copy)  
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Tetra Tech file

Attachments: via email

**DRAFT FINAL**  
**REMEDIAL INVESTIGATION REPORT ADDENDUM, 2010**  
**FOR**  
**OPERABLE UNIT 7 OF THE UBBY ASBESTOS SUPERFUND SITE**

**February 2012**

**Prepared for:**

**MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY**  
**Remediation Division**  
**P.O. Box 200901**  
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**DEQ Contract No. 407026**  
**Task Order No. 77**



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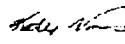
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MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

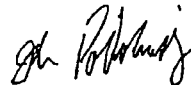
REVIEWS AND APPROVALS

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- B Environmental Resource Specialist (ERS) Reports
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### Attachment

Libby Asbestos Site, Troy Operable Unit 07 Residential/Commercial Cleanup Criteria, Specific Use Area  
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## ACRONYMS AND ABBREVIATIONS

|                   |  |
|-------------------|--|
| AAS               | Outdoor Ambient Air Study  |
| CDM               | Camp, Dresser, and McKee   |
| CERCLA            | Comprehensive Environmental Response, Cleanup, and Liability Act   |
| CIC               | Community Involvement Coordinator                                  |
| COC               | Chain of Custody   |
| CUA               | Common Use Area  |
| DEQ               | Montana Department of Environmental Quality                        |
| DQO               | Data Quality Objective   |
| EDD               | Electronic Data Deliverable  |
| EPA               | U.S. Environmental Protection Agency                               |
| ERS               | Environmental Resource Specialist                                  |
| ESAT              | Environmental Services Assistance Team                             |
| ft <sup>2</sup>   | Square feet  |
| FS                | Feasibility Study  |
| FSDS              | Field Sample Data Sheet  |
| ISO               | International Organization for Standardization                     |
| LA                | Libby Amphibole Asbestos   |
| LUA               | Limited Use Area   |
| NIOSH             | National Institute for Occupational Safety and Health              |
| NUA               | Non-use Area   |
| OU/OU7            | Operable Unit/Operable Unit 7 of the Libby Asbestos Superfund Site |
| PDA               | Personal Digital Assistant   |
| PDF               | Portable digital format  |
| PLM               | Polarized Light Microscopy   |
| PLM-VE            | Polarized Light Microscopy-Visual Estimation                       |
| PLM-Grav          | Polarized Light Microscopy – Gravimetric                           |
| PRI               | Project Resources, Inc.  |
| QA/QC             | Quality Assurance/Quality Control                                  |
| RDI               | Removal design investigation                                       |
| RI                | Remedial Investigation   |
| s/cm <sup>2</sup> | Structures per square centimeter                                   |
| SAP               | Sampling and Analysis Plan   |
| SOP               | Standard Operating Procedure                                       |
| SUA               | Specific Use Area  |
| TAAD              | Troy Ambient Air Database  |
| TAPE              | Troy Asbestos Property Evaluation                                  |
| Tetra Tech        | Tetra Tech EM Inc.   |
| TEM               | Transmission Electron Microscopy                                   |
| TFO               | Troy Field Office  |
| TOAD              | Troy Owner Access Database   |
| USACE             | United States Army Corps of Engineers                              |
| VCI               | Vermiculite Containing Insulation                                  |



## 1.0 INTRODUCTION

Tetra Tech EM Inc. (Tetra Tech) has been tasked by the Montana Department of Environmental Quality (DEQ) under DEQ Contract No. 407026, Task Order No. 77, to prepare an addendum to the Draft Final Remedial Investigation (RI) Report for Operable Unit 7 (OU7) of the Libby Asbestos Superfund Site for calendar year 2010. The United States Environmental Protection Agency (EPA) is the lead agency for the Libby Asbestos Superfund Site and the DEQ is the lead agency for OU7 through a cooperative agreement with EPA. This RI Addendum report presents the data collected in 2010 under the Troy Asbestos Property Evaluation (TAPE) Work Plan (Tetra Tech 2007) and Outdoor Ambient Air Study (AAS) Work Plan (Tetra Tech 2009b). These investigations were undertaken to assess the nature and extent of Libby Amphibole asbestos (LA) contamination within OU7. The data presented in this RI Addendum report are a culmination of TAPE, AAS, and associated activities that occurred from January 1, 2010 to December 31, 2010. The TAPE and AAS data will be used in the preparation of a site risk assessment, Feasibility Study (FS), remedy selection, and the eventual remediation of OU7. Tetra Tech is the contractor for the DEQ and has assisted with all OU7 investigations to date.

### 1.1 REMEDIAL INVESTIGATION ADDENDUM PURPOSE AND OBJECTIVES

The purpose of this RI Addendum report is to prepare a document consistent with the *Draft Final RI Report for Operable Unit 7 (OU7) of the Libby Asbestos Superfund Site* (Draft Final RI Report) (Tetra Tech 2010e) by summarizing the presence of LA in soil, ambient air, and the interior of buildings as noted during TAPE inspections and AAS sampling during 2010. A description of TAPE and AAS field methods, sampling activities, quality assurance and quality control (QA/QC) samples, opportunistic samples, and deviations from the established TAPE and AAS Work Plans is provided in this report. In addition, this RI Addendum report covers the OU7 removal actions that occurred in 2010. All TAPE and AAS investigations in 2010 were completed in support of the primary RI objectives for OU7, which are presented in the Draft Final RI Report (Tetra Tech 2010e).

This RI Addendum serves as an update to the Draft Final RI Report (Tetra Tech 2010e). Future addenda will be annually prepared as additional TAPE and AAS data are obtained, as removal activities are performed, as EPA residential and commercial removal action levels and clearance criteria are amended, and when a risk assessment is completed. The EPA removal action levels and clearance criteria are outlined in the document *Libby Asbestos Site Residential/Commercial Cleanup Action Level and*

*Clearance Criteria Technical Memorandum* (EPA 2003), which provides current guidance for identifying properties within the Libby Asbestos Superfund Site that require (or are eligible for) a removal action. In addition to the EPA removal action criteria, the DEQ also evaluates OU7 properties for removal action using other lines of evidence to determine if removal is warranted. Alterations to EPA action levels and clearance criteria may influence on-going TAPE and AAS sampling requirements and protocols and could affect the number of properties requiring removal actions. Also, the results of additional TAPE investigations may impact the delineation of LA contamination within OU7.

A risk assessment was not completed as part of the Draft Final RI Report (Tetra Tech 2010e) because the toxicity of LA is still under investigation. Once LA toxicity studies have been completed by the EPA, a site-wide risk assessment will be included in the appropriate annual addendum to the RI. The draft final and the annual addenda to the RI will be combined with the risk assessment to form a future final RI for OU7.

## 1.2 REPORT ORGANIZATION

This RI Addendum report is organized into seven sections of text, which are followed by literature references, figures, and appendices. Tables are presented within the text. The contents of Sections 1.0 through 5.0 are briefly described below.

Section 1.0, Introduction - describes the report purpose, objectives, and organization.

Section 2.0, 2010 TAPE Investigation Activities – provides an update for year 2010 to TAPE investigative objectives and procedures, field methods and activities, data management, deviations from the TAPE Work Plan, and analytical methods; provides an assessment of TAPE data quality and description of Removal Design Investigation (RDI) procedures; and provides an assessment of TAPE and RDI data quality.

Section 3.0, AAS Investigation Activities – provides an update for year 2010 to AAS investigative objectives and procedures, field methods and activities, data management, QA and QC methods and samples, management of investigation-derived waste, opportunistic sampling, deviations from the AAS Work Plan, and analytical methods. It also provides an assessment of AAS data quality.

Section 4.0, Field Results and Nature and Extent of Contamination - summarizes the current understanding of the nature and extent of contamination based on field observations and data gathered during the TAPE and AAS investigations in 2010. This section also discusses the removal actions that occurred in OU7 in 2010.

Section 5.0, Conclusions and Recommendations - presents conclusions and recommendations based on this addendum to the Draft Final RI Report.

Background information on OU7, the Libby Asbestos Superfund Site, and LA is in Sections 1.3 through 3.0 and on Figures 1-1 through 1-3 in the Draft Final RI Report (Tetra Tech 2010e) and is therefore not repeated in this RI Addendum report. The Draft Final RI Report (Tetra Tech 2010e) also contains an explanation on the EPA removal action criteria (EPA 2003) in Section 3.4.

## 2.0 TROY ASBESTOS PROPERTY EVALUATION (TAPE) INVESTIGATION ACTIVITIES

This section describes the objectives, methods, and procedures utilized during the TAPE investigations and associated activities in 2010. The information presented in this section serves as an update to Section 4.0 of the Draft Final RI Report (Tetra Tech 2010e); for greater detail on TAPE procedures, the reader should refer to the Draft Final RI Report or to the *Final TAPE Work Plan (Field Sampling Plan and Quality Assurance Project Plan)* for the Troy OU7 of the Libby Asbestos Superfund Site (Tetra Tech 2007). The TAPE process was initiated in 2007 and is presently on-going.

### 2.1 TAPE OBJECTIVES AND FIELD INVESTIGATION METHODS

Previous investigations in Libby, Montana determined that LA was present in multiple environmental media including indoor air, outdoor ambient air, attic insulation, and soil. Due to the proximity of Libby and Troy and the historical connection the towns share, it was determined that the magnitude and potential exposure of Troy residents to LA was unknown and that additional data were needed to define the nature and extent of LA to support removal action decisions. In response to this decision, the TAPE data collection process was formulated and specific TAPE Data Quality Objectives (DQO) were established to ensure adequate data were collected and under the appropriate conditions. One of the primary objectives of the TAPE is to determine the eligibility of properties for removal actions and to obtain sufficient information to evaluate the properties if the eligibility criteria should change. This objective is supported by the *Draft Final Libby Asbestos Site Residential/Commercial Cleanup Action Level and Clearance Criteria Technical Memorandum* (EPA 2003)(Section 3.4 of Draft Final RI Report [Tetra Tech 2010e]), which outlines the criteria a property must meet to be eligible for removal activities and serves as the basis for the TAPE sampling methodology. The following subsections outline general TAPE inspection protocols that occurred in 2010.

#### 2.1.1 Site Access

A signed access agreement is required before a TAPE inspection occurs on a property. Unlike previous years, a bulk access agreement mailing was not performed in 2010. The majority of properties within OU7 had undergone a TAPE inspection between 2007 and 2009, and with the publicity of TAPE inspections during that time, it was reasoned that property owners would request an inspection in 2010 if they were interested. Interested property owners would contact the Community Involvement Coordinator (CIC) at the DEQ Troy Information Center to acquire an access agreement. Once a signed

access agreement had been received, the CIC contacted the property to schedule a TAPE inspection and sampling visit.

#### 2.1.2 Community Engagement

The community relations program for OU7 was developed prior to the start of the initial field season in 2007 and continues currently. Prior to each field season from spring 2007 through 2010, the DEQ mailed a public meeting announcement postcard to individual property owners, citizens groups, and city and county officials to announce the date and the content of the meeting. The meetings offered the public a summary of the field activities that would take place that summer, as well as the opportunity to question both the EPA and the DEQ about activities being conducted in OU7. The Troy public meeting for 2010 was held on May 17, 2010.

#### 2.1.3 Interior Inspection and Sampling

Each land parcel within OU7 is identified by a unique two-letter, six-digit address number (AD number) for tracking purposes. The TAPE field team would arrive at the property scheduled for inspection and record all field data using the assigned AD number. The TAPE investigation commenced with a verbal interview with the property owner or resident. The verbal interview addressed all primary and secondary buildings and exterior use areas located on the property. Each building on the property was assigned a unique building identification number (BD-2XXXXX) for tracking purposes. The attic of each building was accessed and inspected by the field team for the presence of vermiculite insulation and/or other visible vermiculite. The field team also inspected additional areas where vermiculite insulation may have been exposed in living spaces (e.g., crawlspaces, closets, wall openings). Wall openings were only inspected if the cavity was open, sharing a common air space with the living spaces, and visible to the field team while inspecting interior living spaces. The visual inspection included checking under other types of attic insulation (such as blown-in or fiberglass insulation) for vermiculite insulation. If there was minor damage in the home that could have caused exposure of the residents to vermiculite, the field team may have installed temporary barriers (caulking cracks, taping over openings) to prevent additional vermiculite from entering the living space. Habitable buildings with more extensive damage and greater potential exposure were addressed in a separate response, referred to as an Environmental Resource Specialist (ERS) response. Details on ERS activities are in Section 4.1.5. Soil samples were collected from all accessible soil surfaces inside buildings, such as garages, pump houses, sheds,

basements, and crawlspaces. Soil was sampled from interior surfaces regardless of the results of the visual inspection. TAPE interior surface soil samples were collected as 30-point composites with each aliquot being collected from zero to three inches in depth. Variations to this sampling protocol were documented in all cases and were limited to factors such as limited volume or square footage, or limited access to the interior area, or an inability to meet the specified sampling depth.

#### 2.1.4 Exterior Inspection and Sampling

All areas of OU7 properties not covered with buildings were inspected for vermiculite in soil and surface materials. These exterior areas were grouped into four general types: (1) specific use area (SUA) (e.g., gardens, flowerbeds, etc.), (2) common use area (CUA) (e.g., yard), (3) limited use area (LUA) (e.g., maintained field, overgrown area, etc.), and (4) non-use area (NUA) (wooded area, unmaintained field, etc.). A unique use area identification number (UA-2XXXXX) was assigned to each individual exterior use area that was delineated and inspected. For the TAPE, visual point inspections correlated approximately with soil sample aliquot locations. There was a minimum of 5, and a maximum of 30, visual point inspections per use area. After the visual inspection of the property was conducted, the TAPE field team collected a 30-point composite soil sample from each exterior use area. Each composite was obtained from either a depth of zero to three inches for CUAs and LUAs or from a depth of zero to six inches for SUAs. No soil samples were collected from non-soil-covered areas such as parking lots or other outdoor paved areas. Each aliquot was examined for the presence of visible vermiculite. The amount of visible vermiculite was categorized as none, low, intermediate, or high and described as expanded or unexpanded.

#### 2.1.5 QA/QC Samples

Various field QA/QC samples were collected as part of the TAPE investigation to satisfy data quality objectives. The basis for the TAPE QA/QC sampling (type, frequency, etc.) is outlined in the *Draft Quality Assurance Project Plan* (CDM 2007a), which was prepared for the Libby Asbestos Superfund Site. All field QA/QC samples collected during the TAPE were submitted to the laboratory as "blind" samples (labeled as a collected sample). The field teams collected equipment blanks and soil duplicate samples in 2010.

Soil field equipment blanks were collected at a rate of one per calendar week of sampling per field team. Field equipment blanks were collected by pouring distilled water over the sampling equipment into a

decontaminated stainless steel sampling bowl and then pouring the rinse water from the bowl into a sample bottle. Soil field duplicate samples were collected at a frequency of one sample per 20 composite soil samples or a rate of 5 percent. Field duplicate samples were collected as samples co-located in the same exterior use area (yard or landscaped area, for example) and contained the same number of sample aliquots, but were collected from adjacent aliquot locations.

#### **2.1.6 Field Documentation**

The primary tool for field documentation of TAPE inspection information was the Trimble GeoXT Personal Digital Assistant (PDA). In addition to the PDA, the field teams also recorded information in field logbooks, on property sketches, and with photographs. All TAPE data, including answers from property owner interviews, results of the visual inspection at the property, and sample collection data, were entered into the PDA. Use of the PDA also allowed for compilation of TAPE data into the OU7 Scribe Database. Any additional information that was not recorded on the PDA field forms was recorded in the logbooks. The field logbook served as an independent (backup) record for all activities conducted and samples collected at a property, in the event that the PDA data were lost or corrupted. TAPE inspection information was also recorded on individual field sketches. The field sketch showed the property boundary, building locations, exterior use areas, fences, pavement, large trees, location of visible vermiculite (if found), and other major identifiable features of the property. Each TAPE field team was also provided with a digital camera for photo-documenting primary characteristics of inspected parcels. The field teams collected photographs of the primary and secondary buildings, attic insulation, any vermiculite insulation or visible vermiculite discovered on the premises, use areas, and any other notable features.

#### **2.1.7 Decontamination and Investigation-Derived Waste Handling**

Re-usable stainless steel scoops, bowls, and augers were used for soil sampling and underwent a decontamination process after each soil sample was collected. Decontamination occurred in the location where the soil sample was collected and included spraying the equipment with distilled water and drying it with paper towels. The water was allowed to fall on the ground surface within the area just sampled and the paper towels were placed in a labeled asbestos waste bag. Field team members were required to wear nitrile gloves during dust and soil sampling. Any visible soil on hands or clothing was removed by washing with soap and water. Investigation-derived waste included used wet wipes,

wet paper towels, disposable gloves, used respirator cartridges, used plastic tubing, disposable protective outerwear, plastic floor coverings, and other minimal waste. All investigation-derived waste was double-bagged in appropriate asbestos bags, labeled with asbestos labels, and stored in an approved containment area at the Tetra Tech Troy field office where it was later transferred to an approved landfill (Lincoln County outside of Libby) for final disposal.

#### 2.1.8 Record Keeping and Sample Management

At the end of each field day, the TAPE field teams returned to the field office to download the PDA and cameras, catalog and store all field and QC samples, and turn in the appropriate logbook and paperwork to the Tetra Tech sample coordinator. Once inspection data on the PDA was reviewed for accuracy and imported into Scribe, the Sample Database Coordinator created chain-of-custody (COC) forms for all of the samples collected. The field team confirmed that each COC matched the samples in the numbered storage bin, signed the COC, and placed it in the corresponding bin. The sample coordinator stored the samples in a secure area until the samples were transferred to the appropriate laboratories.

#### 2.2 TAPE SAMPLE ANALYSIS

Soil samples were analyzed using Polarized Light Microscopy-Visual Estimation (PLM-VE). Sample preparation was performed in accordance with Libby standard operating procedure (SOP) SRC-Libby-01 and sample analysis was performed in accordance with Libby SOP SRC-Libby-03, Analysis of Asbestos Fibers in Soil by Polarized Light Microscopy (SRC 2002, 2<sup>nd</sup> Revision). Soil samples from OU7 were not analyzed using the additional PLM Gravimetric (PLM-Grav) method, as the results from testing soils using this method would not alter whether or not a property was eligible for removal.

#### 2.3 TAPE DATA MANAGEMENT

There were no changes to the management of TAPE parcel, field, or electronic data in 2010 with the exception that electronic data entered into the OU7 Scribe database complied with the EPA reporting requirements specified in the EPA Data Management Plan (EPA 2010). A complete description of data management practices for TAPE investigations is in the *Final TAPE Work Plan (Field Sampling Plan and Quality Assurance Project Plan)* for the Troy OU7 of the Libby Asbestos Superfund Site (Tetra Tech 2007) and in the *Data Management Plan Version 3.0* (Tetra Tech 2009a).



## 2.4 TAPE DATA QUALITY ASSESSMENT

Tetra Tech assessed the quality of both field and laboratory data generated during the TAPE to ascertain whether they satisfied project DQOs specified in the Final TAPE Work Plan (Tetra Tech 2007). The TAPE field data verification process is summarized in Section 2.4.1 and TAPE laboratory data verification process is summarized in Section 2.4.2. A statement of data quality is provided in Section 2.4.3.

### 2.4.1 Field Data Verification

Tetra Tech verified the accuracy and completeness of TAPE field documentation collected and recorded during the 2010 field season in accordance with the procedures outlined in the Data Management Plan Version 3.0 (Tetra Tech 2009a) and the Draft Final RI Report (Tetra Tech 2010e). Field data were examined using the Category 1 and Category 2 verification tiers as described in the aforementioned reports.

Category 1 verification was done to identify inconsistencies within the OU7 Scribe database. It was conducted on 100 percent of the data in the OU7 Scribe database generated during 2010. Global queries were done sequentially, so that the broader-based discrepancies were eliminated first. Example global query topics include: (1) identification of blank fields, (2) identification of missing TT or UA numbers, and (3) identification of obvious errors, such as the square footage of a primary residence listed as 50 square feet. After the global queries were run and any issues were resolved, relational queries were conducted. Relational queries were also completed on 100 percent of the data in the OU7 Scribe database generated during each field season. Similar to the global query process, relational queries were completed sequentially, with discrepancies being resolved before moving on to subsequent queries.

Category 2 verification was done to identify errors in the written documentation (e.g., logbook entries and sketches) as well as inconsistencies between the OU7 Scribe database and written documentation. Category 2 verification was performed on at least 30 percent of field forms, logbooks, and photo documentation for the 2010 TAPE field season. In addition, many property database queries and written documentation entries were reviewed due to specific project needs, resulting in greater than 50 percent Category 2 verifications on many of the properties.

#### 2.4.2 Analytical Data Verification

Tetra Tech verified the accuracy and completeness of TAPE laboratory results generated during the 2010 field season in accordance with procedures outlined in the Draft Final RI Report (Tetra Tech 2010e) and the Data Management Plan, Version 3.0 (Tetra Tech 2009a). Analytical data were received from the laboratory in two formats: (1) sample receipt documentation and laboratory bench sheets in Portable Digital Format (PDF) and (2) Electronic Data Deliverables (EDD) in Excel spreadsheet format. Once the analytical results were received from the laboratory, the electronic data were imported into the OU7 Scribe database. This allowed the field data to be linked to analytical results. The analytical data subsequently underwent a three-step verification process to identify and correct any inconsistencies between the laboratory bench sheets, EDDs, and the final OU7 Scribe database. The verification steps were conducted concurrently with data validation, which, while closely associated with data verification, was the mechanism to ensure the quality of the data by verifying that laboratory procedures were consistent with analytical method requirements and were consistent between laboratories and analysts. Tetra Tech conducted data review and data entry verification of the soil sample analytical data in accordance with Libby PLM validation SOP (version 1)(Appendix A of Draft Final RI Report).

#### 2.4.3 Statement on Data Quality

One of the primary objectives of the TAPE is to identify those parcels in OU7 that meet the removal criteria identified by the EPA (EPA 2003). This objective was met in 2010 through visual inspections for vermiculite and the collection and analysis of interior and exterior soil samples. These samples were analyzed at analytical sensitivities sufficient to identify LA above the EPA removal action levels (EPA 2003). In addition, TAPE field and analytical data were verified by the processes described above to ensure accuracy and reliability. As a result, 2010 TAPE data met the TAPE DQOs and were sufficient to determine whether or not inspected properties required additional investigation through the RDI process and/or subsequent removal action if necessary.

### 2.5 RDI OBJECTIVES AND FIELD INVESTIGATION METHODS

The RDI process was implemented in 2010 and conducted at properties where the results of a prior TAPE inspection had found that the parcel met one or more of the EPA removal action criteria. The primary objective of the RDI was to support the removal objective of the TAPE and collect the additional data necessary to design removal activities at these properties. The following sections are a summary of

RDI field methods; a thorough description of the RDI process is in the *Removal Design Investigation (RDI) Sampling and Analysis Plan (SAP) for OU7 of the Libby Asbestos Site* (Tetra Tech 2010b). The RDI SAP also outlines the established DQOs for the RDI.

#### 2.5.1 Pre-Field Inspection Activities

A kickoff meeting was conducted prior to the commencement of the 2010 RDI process. All personnel received necessary training, specific instructions, and detailed property maps identifying OU7 properties. The following specific pre-field inspection activities were performed by the DEQ, the United States Army Corps of Engineers (USACE), or their contractors:

- Property selection and communication
- Land survey
- Scheduling investigations
- Review of previously collected data
- Interior inspection
- Exterior inspection

##### Property Selection and Communication

The DEQ determined the parcels targeted for removal based on EPA removal action criteria and other lines of evidence that indicated removal was necessary at the property (see Section 7.2.4 of the Draft Final RI Report (Tetra Tech 2010e) for a more detailed explanation of this process). The property owner was then contacted to confirm their willingness to participate. The property was then placed in the RDI queue. The presence of children at the property triggered an expedited removal schedule. The RDI was scheduled for a time convenient for the property owner or tenant. If the property owner was unwilling to participate in the RDI investigation and removal process within the stipulated time-frame, the property could be reconsidered for removal at a later date. The nature of each removal action was considered during initial removal-action scheduling, for example, properties slated for removal actions were clustered geographically to maximize the efficiency of the removal.

##### Land Surveys

A land survey was conducted at each property identified for an exterior removal action. Land surveys included delineation of property boundaries and major physical and geographic features of the property (e.g., structures or buildings, trees, individual land use areas), and were completed by a land surveyor

registered and licensed in the State of Montana. When available, a hard copy of the survey was provided to the RDI field team to aid the accurate designation of soil sample locations and results, assist accurate measurements of use area square footages, and denote locations of visible vermiculite and additional inspection information. When land surveys were not available, site-specific sketches on aerial photos or scaled graph paper were used instead.

#### Previously Collected Data

Prior to arriving at a property, the RDI team reviewed all property data (i.e., scanned data archive, Scribe database, and ERS initial assessment form, etc.) to identify data gaps for the RDI. A complete set of property-specific data is maintained in the project file folder at the DEQ Troy Information Center located in Troy, Montana.

#### 2.5.2 Interior Detailed Inspection Activities

Interior detailed inspections were performed to determine the location and extent of LA-containing materials within a building. Information was also collected regarding the general construction and condition of the building and access to LA-containing materials. The RDI interior inspections were performed by USACE contractors and included one or more of the following, depending on the property:

- Attic inspection
- Living space assessment and wall inspection
- Understructure inspection
- Bulk material sample collection
- Interior soil sample collection
- Interior inspection documentation

#### Attic Inspections

Attic inspections were completed on buildings where previous inspections indicated the presence of vermiculite containing insulation (VCI) or on buildings where the presence/absence of vermiculite had not been previously confirmed. Attic inspections were limited to confirming the presence/absence of vermiculite insulation and collecting sufficient details to support removal activities. All attic spaces were inspected until either VCI was confirmed or until the entire attic had been inspected and no vermiculite

insulation had been found. Once vermiculite insulation was confirmed in an attic space, all details for the attic were collected from that location and the inspection was ceased.

#### Living Space Assessments and Wall Inspections

Interior living spaces were further inspected to fill data gaps regarding presence and nature of vermiculite materials. The living space and wall inspections included inspecting all walls, all ceiling and wall penetrations (plumbing, heating, ventilation and air conditioning systems, electrical fixtures, cracks, gaps, etc.), and plaster/mortar materials. If vermiculite additives were identified within building materials, bulk material samples were collected, if appropriate, as discussed in the RDI SAP (Tetra Tech 2010b).

#### Understructure Inspections

Building understructures were inspected to determine if vermiculite materials were present. Vermiculite may appear in understructures as insulation leaking from the attic, walls or vertical pipe or duct penetrations, as additives in building materials, or as vermiculite in soil floors. Understructure inspections included inspecting accessible ceiling and wall penetrations (plumbing, HVAC, electrical, cracks, gaps, fixtures, etc.), plaster/mortar materials, and soil floors. If the building understructure had a soil floor, a visual inspection was completed per Section 4.2.6.1 of the RDI SAP (Tetra Tech 2010b). If vermiculite was not observed in the soil floor, soil samples were collected as discussed in the RDI SAP (Tetra Tech 2010b).

#### Bulk Material Samples

Bulk material samples were collected if friable vermiculite additives were identified in building materials and were collected in compliance with 40 CFR 763.86.

#### Interior Soil Samples

Interior soil samples were collected if significant soil areas (e.g., soil floor) were present and if vermiculite had not been observed during previous visual inspections (this includes areas where the presence of vermiculite was not known due to limited access during previous inspections). Individual

flower pots/planters were not sampled. Interior soil samples were collected in accordance with the RDI SAP (Tetra Tech 2010b).

### 2.5.3 Exterior Detailed Inspection Activities

Tetra Tech performed exterior detail inspections using the RDI exterior inspection protocol. Exterior detailed inspection details were recorded on the PDA, in the logbook, and on the associated sketch(es) as described in the RDI SAP (Tetra Tech 2010b). The exterior detailed inspection activities included one or more of the following, depending on the property:

- Visual inspection
- Soil sampling
- Exterior inspection documentation

#### Visual Inspections

Visual inspection of exterior soils was completed in accordance with SOP CDM-LIBBY-06. A copy of this SOP is included in Appendix C of the RDI SAP (Tetra Tech 2010b). The number of point inspections completed per use area was set at the following: one visual point inspection per 100 square feet (ft<sup>2</sup>) for SUAs, CUAs, interior crawlspaces, and interior surface areas (shed, carport); one visual point inspection per 200 ft<sup>2</sup> for driveways; and one visual point inspection per 500 ft<sup>2</sup> for LUA. Visual inspections were not required for NUAs.

#### Soil Sampling

Although soil samples may have been collected during previous investigations to determine the presence/absence of LA within soil, additional delineation soil samples were collected to further define the extent of LA in soil throughout the property. The collection frequency of RDI soil samples for was the following: one soil sample per 1,000 ft<sup>2</sup> for SUAs, one per 6,000 ft<sup>2</sup> for SUA – Driveways, one per 3,000 ft<sup>2</sup> for CUAs, and one per 15,000 ft<sup>2</sup> for LUAs. Interior surface area sampling requirements were one soil sample per interior surface area. Soil samples were not required for NUAs. Soil samples were collected following the sampling procedures described in the TAPE Work Plan (Tetra Tech 2007).

## Exterior Inspection Documentation

Details for each exterior use area that underwent an RDI were recorded in the PDA and logbook. Property sketches were also completed, as appropriate. Sample information and visual inspection results were recorded on two separate property sketches. If available, a property survey was utilized as the baseline for these sketches. If a property survey was not available, aerial photos, scaled graph paper, or an equivalent was used. Required sketch details are described in Table 4-1 of the RDI SAP (Tetra Tech 2010b).

### 2.5.4 QA/QC Samples

RDI field QA/QC samples were collected during exterior soil sampling. Field QC samples were not collected for bulk material samples because of the homogenous nature of the materials sampled. For soil samples, field duplicates were collected at a frequency of 1 per 20 field samples, from areas sampled during one of the investigation activities discussed in the previous sections. However, individual aliquots for the composite field duplicate samples were collected from different locations (within the same use area) than the original sample. Field duplicate samples were collected in accordance with procedures described in the TAPE Work Plan (Tetra Tech 2007). Equipment rinsate blanks were not collected because limits of detection for LA using PLM were not low enough to capture concentrations expected in equipment rinsate blanks and because the frequency of LA detections in previously-collected soil-sampling equipment rinsate blanks at OU7 have been extremely low.

### 2.5.5 Field Documentation and Housekeeping

Equipment decontamination, investigation-derived-waste management, recordkeeping and chain of custody, field logbooks, sampling labeling and identification, and photographic documentation were conducted in accordance with procedures described in Sections 4.4.1 through 4.4.6, respectively, of the RDI SAP (Tetra Tech 2010b).

## 2.6 RDI SAMPLE ANALYSIS

All RDI samples were processed and analyzed by the EPA Environmental Services Assistance Team (ESAT) laboratory. Samples were relinquished to the ESAT laboratory coordinator as designated by the DEQ, USACE, and EPA. Tetra Tech's Sample Coordinator was responsible for communicating with the ESAT

Laboratory Coordinator to relay pertinent sample and analysis information including sample quantities; special sample handling requirements, processing, or analysis concerns; and requested turn-around times.

#### 2.6.1 Soil Samples

Prior to analysis, soil samples were processed by ESAT using the current version of the Libby soil sample processing SOP (ISSI-LIBBY-01) (ISSI Consulting Group [ISSI] 2000) and the procedures described in the *Soil Preparation Work Plan* (TechLaw 2007). Soil samples, including field duplicates, were analyzed for asbestos by the PLM visual estimation method (PLM-VE) and the PLM gravimetric method (PLM-Grav) in accordance with SOPs SRC-LIBBY-03 (Syracuse Research Corporation [SRC] 2003) and SRC-LIBBY-01 (SRC 2002), respectively.

#### 2.6.2 Bulk Material Samples

Bulk material samples were analyzed in accordance with National Institute for Occupational Safety and Health (NIOSH) 9002, Issue 2, *Asbestos (Bulk)* by PLM (NIOSH 1994). Because the level of detection is estimated (at less than 1 percent asbestos) for this method, no specific level of detection was established for project samples analyzed using NIOSH 9002.

### 2.7 RDI DATA MANAGEMENT

Data management during the RDI was overseen by the Tetra Tech Database Manager in the DEQ Troy Information Center. RDI field crews generated field data on paper, electronic forms, PDAs, and/or digital photographs and were handled in the same manner as TAPE data. For additional information, RDI data management protocol is in the *RDI SAP for OU7 of the Libby Asbestos Superfund Site* (Tetra Tech 2010b) and in the *Data Management Plan Version 3.0* (Tetra Tech 2009a).

Tetra Tech assessed the quality of both field and laboratory data generated during the TAPE to ascertain whether they satisfied project DQOs specified in the Final TAPE Work Plan (Tetra Tech 2007). The TAPE field data verification process is summarized in Section 2.4.1 and TAPE laboratory data verification process is summarized in Section 2.4.2. A statement of data quality is provided in Section 2.4.3.



## 2.8 RDI DATA QUALITY ASSESSMENT

Tetra Tech assessed the quality of both field and laboratory data generated during the RDIs to ascertain whether they satisfied project DQOs specified in the RDI SAP (Tetra Tech 2010b). The RDI field data verification process is summarized in Section 2.8.1 and the laboratory data verification process is summarized in Section 2.8.2. A statement on data quality is provided in Section 2.8.3.

### 2.8.1 Field Data Verification

Tetra Tech verified the accuracy and completeness of the RDI field data collected during the 2010 season in accordance with TAPE field data verification procedures outlined in the Data Management Plan, Version 3.0 (Tetra Tech 2009a) and described in Section 2.4.1 of this RI Addendum report. Category 1 verification was continuously conducted as RDI data were imported into the OU7 Scribe database. The Tetra Tech Scribe Database Coordinator and Field Team Manager also verified RDI field data against analytical data as it was made available from the EPA so that removal activities could be planned. Once the removal plans were prepared by the USACE contractor, Tetra Tech again reviewed the field data reported in the removal design drawings for accuracy. Category 2 verification was performed on approximately 15 percent of the RDI field data following the field season.

### 2.8.2 Analytical Data Verification

Electronic analytical data from the RDI was reviewed by the EPA and then provided to Tetra Tech for comparison against RDI field data. The Tetra Tech Scribe Database Manager and Field Team Manager verified that electronic analytical data were reported accurately and supported the removal requirements. Any discrepancies in electronic analytical data were reported to the EPA. RDI analytical data did not undergo the TAPE data validation process where the data are reviewed against laboratory procedures for consistency with analytical method requirements and between laboratories and analysts. It was determined by the DEQ that analytical data validation of RDI soil samples was not necessary because the soil represented by the data had already been removed or would soon be removed (DEQ Personal Communication 2010).

### 2.8.3 Statement on Data Quality

The primary objective of the RDI was to address data gaps that prevent the development of detailed removal designs for those properties identified for removal action. The RDI process was designed to fill these data gaps by further delineating the extent of LA on each property. This objective was met in 2010 through the RDI processes of (1) visual inspections for vermiculite in interior attics and living areas and exterior soil and (2) the collection and analysis of additional soil samples and bulk material samples. These samples were analyzed at analytical sensitivities sufficient to identify LA above the EPA removal action levels (EPA 2003). In addition, RDI field and analytical data were verified by the processes described above to ensure accuracy and reliability. As a result, 2010 TAPE data met the RDI DQOs and were sufficient to determine which areas contained LA or LA source materials and required removal action.

## 2.9 DEVIATIONS FROM THE TAPE WORK PLAN AND RDI SAP

The following sections discuss modifications in TAPE and RDI procedures and the collection of opportunistic field samples.

### 2.9.1 Troy Field Office Record of Modifications

Field procedures were continually monitored to ensure that the objectives of the TAPE Work Plan and RDI SAP were accomplished. Modifications to the procedures described in the TAPE Work Plan and/or RDI SAP were occasionally necessary to fulfill project objectives or to accommodate changes to project objectives. This section summarizes deviations from the TAPE Work Plan (Tetra Tech 2007) and RDI SAP (Tetra Tech 2010b) as they relate to the 2010 TAPE and RDI activities.

Routine modifications (e.g., field team could not reach required depth of soil sample) were recorded in the field forms on the PDA. All minor handwritten entry errors in the logbook or property sketch were corrected by utilizing a single strikeout through the information to be changed, initials of the field staff member recording the modification were provided, and the date of documentation changes were noted. The corrected information was entered in close proximity to the erroneous entry where possible. Errors encountered after the document had been scanned were corrected using electronic comments attached to the PDF file using Adobe Acrobat.

Project-wide modification was necessary on occasion and required the DEQ Project Officer to consult with the EPA Remedial Project Manager for the modification. When a modification was required, a Troy Field Office (TFO) Record of Modification form was filled out by the DEQ Project Officer. The Tetra Tech project team did not implement the modification until verbal or written approval was granted by the DEQ Project Officer. There were four TFO modifications prior to December 31, 2010. Table 2-1 below summarizes the modifications for the 2010 TAPes and RDIs. Copies of the 2010 modification forms are provided in Appendix A.

### 2.9.2 Opportunistic Samples

There were no opportunistic samples collected during TAPE or RDI investigations in 2010.

**TABLE 2-1  
TROY FIELD OFFICE RECORDS OF MODIFICATION FOR 2010**

| TFO Record of Modification Number | Modifies TAPE WP or RDI SAP | Date of TFO Record of Modification | Description of Modification  |
|-----------------------------------|-----------------------------|------------------------------------|--|
| TFO-00001                         | RDI SAP                     | 7/21/2010                          | Revises page 23, Section 4.4.5, Sample Labeling and Identification, to read as follows: "The sample labeling scheme is as follows: TD-XXXXX; where TD identifies that a sample is collected in accordance with the RDI SAP and XXXXX represents a 5-digit numeric code." |
| TFO-00002                         | RDI SAP                     | 8/5/2010                           | Modifies RDI procedures for the Bruce Cole property (AD-202036), to limit the RDI to a reasonable area surrounding the barn. This is a property-specific modification that does not affect the overall project.  |
| TFO-00015                         | TAPE WP                     | 5/4/2010                           | Eliminates the collection of equipment rinsate blanks for soil sampling.   |
| TFO-00016                         | TAPE WP                     | 5/4/2010                           | Adjusts the schedule of visual observations and soil sampling frequency for TAPE inspections to be consistent with the final OU4 General Property Investigation WP by CDM, dated April 2010.   |

**Notes:**

RDI Removal design investigation  
SAP Sampling and analysis plan  
TAPE Troy asbestos property evaluation  
TFO Troy field office  
WP Work plan

### 3.0 2010 OU7 OUTDOOR AMBIENT AIR STUDY

This section describes objectives, methods, and procedures associated with calendar year 2010 of the AAS program. The AAS program was initiated in 2009 and continued through 2010. It is expected to continue through most of 2011, ending in October 2011. The information presented in this section serves as an update to Section 5.0 of the Draft Final RI Report (Tetra Tech 2010e); for greater detail on AAS procedures, the reader should refer to the Draft Final RI Report or to the *Final RI Work Plan, Outdoor Ambient Air Study, for OU7 of the Libby Asbestos Superfund Site* (Tetra Tech 2009b).

#### 3.1 AAS OBJECTIVES AND FIELD INVESTIGATION METHODS

The OU7 AAS investigation monitoring began in October 2009. Initial field activities included the selection of site monitoring stations, assembly and installation of monitoring equipment, and initiation of outdoor ambient air sample collection. The AAS program includes monitoring of ambient air in four distinct "air zones" across OU7. Seven monitoring station locations within four air zones were sampled to evaluate upwind, downwind and residential exposure scenarios. The four air sampling zones were originally identified based on geographic location and land use coverage. Personnel and work zone monitoring was also conducted to ensure worker safety and to evaluate real-time airborne levels of asbestos in ambient air.

Calendar year 2010 encompasses portions of both Year 1 (October 30, 2009 through October 27, 2010) and Year 2 (began on November 10, 2010) of the AAS program. Calendar year 2010 encompasses Year 1 sample periods 7 through 36 (January through October 2010) and Year 2 sample periods 37 through 41 (November through December 24, 2010). Although the AAS objectives remained the same throughout Year 1 and Year 2 of the AAS program, the air sampling stations were moved for Year 2 sampling to provide a more robust data set for human health risk assessment and the evaluation of future remedial actions. A complete description of the AAS program DQOs is in Section 3 of the AAS Work Plan (Tetra Tech 2009b). The following sections provide a summary of field investigation methods, QA/QC efforts, data verification and validation, deviations from the AAS Work Plan (Tetra Tech 2009b) and a summary of calendar year 2010 AAS program activities.

### 3.1.1 Site Access and Pre-Sampling Activities

Site access, logistics and pre-sampling activities conducted in 2010 remained mostly unchanged from 2009. Station installation procedures and operation of the meteorological station remained unchanged. The only major change to the AAS program involved the relocation of monitoring stations at the start of Year 2 in November 2010.

The locations for Year 1 stations were finalized in the fall of 2009. Tetra Tech assigned unique sample station identification numbers to the seven Year 1 stations. Year 2 of the AAS program started with the selection of 7 new station locations in late fall of 2010. The seven new outdoor ambient air sampling locations were numbered 11 through 17. Figure 3-1 displays the locations of the AAS stations for both Year 1 and Year 2. Station installation procedures did not deviate from what was presented in the AAS Work Plan (Tetra Tech 2009b) and the Draft Final RI Report (Tetra Tech 2010e). The selection of Year 2 monitoring locations did require a modification to the AAS Work Plan (Tetra Tech 2009b). Deviations from the AAS Work Plan are discussed in Section 3.4 of this RI Addendum report.

### 3.1.2 Field Investigation Methods and Activities

Field investigation methods and activities remained mostly unchanged from 2009. Sample collection methods, equipment, and schedule followed what was presented in the AAS Work Plan (Tetra Tech 2009b) and the Draft Final RI Report (Tetra Tech 2010e). In addition, the methods established in the AAS Work Plan and reported in the Draft Final RI Report for field documentation, sample management, sample analysis, decontamination, and handling of investigation derived waste were followed in 2010.

The only changes to AAS field investigation activities in 2010 included a reduction in sample pump flow rates and the collection of co-located samples from rotating stations as opposed to a single station. These changes required modifying the AAS Work Plan. Details regarding these modifications are presented in Section 3.4.

### 3.1.3 Data Management

Methods for the management of field data, electronic data, and analytical data in 2010 did not deviate from the methods presented in the AAS Work Plan (Tetra Tech 2009b) and the Draft Final RI Report (Tetra Tech 2010e).

### 3.2 QA/QC SAMPLES

Three types of QA/QC samples were collected during calendar year 2010: lot blanks, field blanks, and co-located samples. All QA/QC samples were submitted "blind" to the laboratory using unique sample identification numbers similar to those of real field samples.

Lot blanks – Before any cassettes were used, a cassette from each filter lot was randomly selected and submitted for analysis. Data for lot blank samples were used to evaluate whether cassettes were received asbestos-free from the supplier. Tetra Tech did not use a cassette from a given lot until the lot blank results confirmed the cassettes were asbestos-free. The lot blanks were analyzed for asbestos fibers by the same Transmission Electron Microscopy (TEM) method used for field sample analysis.

Field blanks – During 2010, one field blank was collected during each 5-day sampling event. The field blanks were collected by opening the sample cassette package and exposing the cassette to the full range of field efforts including sample handling, car travel, 10 seconds attached to the air sample pump (not turned on), sample cassette retrieval, return to office, packaging, and transport to the laboratory. The field blanks were analyzed for asbestos fibers by the same TEM method used for field sample analysis. Data for the field blank ambient air samples were evaluated to assess whether a potential existed for sample cross-contamination during sample handling.

Co-located samples – Co-located samples were collected throughout 2010 to evaluate sampling variability. One co-located sample was collected per sampling event (a total of 35 co-located samples had been collected as of December 24, 2010). During Year 1 of the AAS program (sampling periods 1 through 36), all co-located samples were collected from the same sampling location (Station T4QC). Station T4QC was located approximately seven feet from sampling station T4 at the DEQ Troy Information Center. At the start of AAS program Year 2 (beginning with period 37) co-located samples were collected from rotating station locations (T11, T12, T13, T14, and T15). Section 3.4 discusses the Year 2 AAS program changes regarding the collection of co-located samples. All co-located samples were handled and sent to the laboratory for analysis using the same TEM method used for field samples.

### 3.3 DATA QUALITY ASSESSMENT

The primary objective of data quality assessment is to evaluate the usability of the data collected in meeting the DQOs of the project. AAS field and analytical data verification procedures in 2010 followed

those presented in the AAS Work Plan (Tetra Tech 2009b) and the Draft Final RI Report (Tetra Tech 2010e). The sections below provide a brief summary of verification procedures; for additional details on these procedures, the reader is referred to the aforementioned reports.

#### 3.3.1 Field Data Verification

AAS field data from each sampling round were reviewed for completeness, accuracy, and consistency to ensure the quality of the outdoor ambient air samples collected. Pump history files were first reviewed to ensure performance was within acceptable criteria. The pump history data were then compared to data manually recorded on Field Sampling Data Sheets (FSDS) and the ambient air logbook to ensure data were consistent. Data from the pump history files, FSDS, and the logbook were then checked against the Troy Ambient Air Database (TAAD) to ensure that data were once again consistent between the data summary locations and that notable events were documented throughout. If discrepancies were noted on the FSDS forms or in the logbook, the field team was contacted and changes to the appropriate files were made with electronic notes on the PDF files. Discrepancies or errors identified in the TAAD database were addressed by manually correcting the entries in the database. Finally, a review of the OU7 Scribe Database was completed after data entry to verify that the transfer of data from TAAD was complete and no errors were present.

#### 3.3.2 Analytical Data Verification

AAS samples were analyzed using TEM according to International Organization for Standardization Method 10312. Tetra Tech conducted data review and data entry verification of 2010 AAS data in accordance with SOP EPA-LIBBY-09 (revision 1) (Syracuse Research Corporation [SRC] 2008). A copy of this SOP is contained in Appendix F of the AAS Work Plan (Tetra Tech 2009b). Tetra Tech followed the data review and data entry verification procedures outlined in this SOP with some minor deviations for OU7. The deviations are explained, where applicable, in the subsections below.

Tetra Tech's data review and data entry verification process entailed three steps: (1) the selection of data records for review and verification, (2) a review of the original laboratory bench sheets, and (3) verification of the transfer of results from the bench sheets onto the electronic data deliverables. Verification that the electronic data were uploaded properly to the OU7 Scribe Database had not been done as of December 31, 2010 since the data had not yet been published to the database. Tetra Tech also reviewed field QC sample results for adherence to minimum frequency requirements and

procedures and QC limits specified in SOP LB-000029b (SRC 2008). The data review and data entry verification process is described in the subsections below.

#### Selection of TEM Records for Review

SOP EPA-Libby-09 specifies review and verification of a minimum of 10 percent of the sample records. Tetra Tech deviated from this minimum requirement and reviewed 100 percent of the sample records for sampling periods 1 through 5, approximately 50 percent of the sample records for sampling periods 6 through 18, approximately 25 percent of the sample records for sampling periods 19 through 36, and approximately 10 percent of the sample records for sampling periods 37 through 41. The decision to exceed the minimum review and verification requirement early in the study was in part due to the high incidence of significant errors (e.g., incorrect transfer of structure counts from bench sheets to EDD) noted during analysis of early samples, and in part because the structure of the database was changed in early 2010 at the request of EPA and a number of data formatting and structural issues arose as a result. Refer to the appropriate quarterly AAS report for details regarding errors and issues identified during data review and verification (Tetra Tech 2010 a, c, d, and Tetra Tech 2011).

SOP EPA-Libby-09 also specifies that a query of the OU7 Scribe database is performed to select the following information on the AAS sample records: analyst, detected results, and non-detected results. The record selection process is described in detail in the SOP (SRC 2008). However, since the OU7 AAS data were not published to the OU7 Scribe database in a timely manner, the data records reviewed during calendar year 2010 were selected by hand, using slightly different criteria than those specified in the SOP. Sample records that underwent data review and data entry verification were hand selected using the following criteria: detected results and sample type (QC samples).

#### Consistency Review of Laboratory Bench Sheets

Tetra Tech inspected the information recorded on the original hand-written laboratory bench sheets in accordance with the consistency review of laboratory bench sheets procedure outlined in Section 5 of SOP EPA-LIBBY-09 (SRC 2008), with minor OU7-related modifications. The bench sheets were reviewed to identify any data omissions, apparent inconsistencies, or potential errors in structure. The objective was to assess whether the raw structure data were recorded in accordance with International Organization for Standardization (ISO) 10312 counting rules (as modified by all applicable Libby laboratory modifications).



Corrective Action – Tetra Tech summarized all apparent inconsistencies, omissions, and suspected errors, and provided them to ESAT, which forwarded them to the appropriate laboratories for response. ESAT determined which items were authentic errors that required correction. The analytical laboratories submitted revised bench sheets to ESAT, who then provided them to Tetra Tech, for final review and archiving.

#### Verification of Data Transfer from Bench Sheet to Database

To ensure that data from laboratory bench sheets were transferred, through the EDDs, into the OU7 Scribe database without error or omission, Tetra Tech compared selected analysis-specific information in the laboratory bench sheets to that in associated EDD. Tetra Tech followed the verification of data transfer procedure outlined in Section 6.0 of SOP EPA-LIBBY-09 (SRC 2008), modified as applicable for OU7. The bench sheets include the laboratory COC form, sample check-in form, preparation log, and hand-written data record sheets. This process compared analysis-specific information in the EDD to the original laboratory job documentation (e.g., internal laboratory COC; preparation logs; bench sheets, etc.); and included verifying (by recalculation) the reported air sensitivities for amphibole and chrysotile; the area analyzed; and for indirect preparations, the indirect preparation dilution factor. Using the bench sheets, Tetra Tech also recounted the countable LA structures across all grid openings evaluated and compared this number (and the calculated concentrations) to the total number of LA structures in the EDD.

The final step in the verification of data transfer process is to verify that the data in the EDDs were loaded into the OU7 Scribe database without error or omission. This had not been done as of the end of 2010, since the analytical data had not yet been published to the database.

Corrective Action – Tetra Tech summarized all apparent inconsistencies, omissions, and suspected errors, and provided them to ESAT, which forwarded them to the appropriate laboratories for response. ESAT determined which items were authentic errors that require correction. The analytical laboratories submitted revised bench sheets and/or EDDs to ESAT, which then forwarded them to Tetra Tech for final review and archiving.

### Review of Field and Laboratory Quality Control Sample Results

Review of field and laboratory QC sample results, including implementation of corrective actions will be completed once all year one QC sample data are successfully loaded into the OU7 Scribe database. It is expected that the entire Year 1 field QC data set will be available in the OU7 Scribe database during quarter 6 and will allow for a complete review and implementation of corrective actions, if necessary.

Tetra Tech will review field QC samples (including co-located samples and field blanks) and the laboratory reviews the laboratory QC samples for adherence to the minimum frequency requirements set forth in the AAS Work Plan (Tetra Tech 2009b) and in SOP LB-000029b (SRC 2007), and for conformance with the QC limits specified in SOP LB-000029b (SRC 2007).

For the co-located field samples, Tetra Tech will use the same statistical comparison test used for the Libby ambient air study. Each co-located sample pair will be compared using the Poisson rate test, included as Attachment 4 to SOP LB-00029b (SRC 2007), to determine whether the results are statistically different from one other at the 95 percent confidence level. The Poisson rate test is suitable for this analysis because fiber counts on TEM grids are considered independent and random.

Corrective Action – For laboratory QC sample exceptions to QC criteria, the appropriate corrective actions are described in detail in LB-00029b (SRC 2007). For co-located field sample pairs, Tetra Tech will review the Poisson rate test results and investigate the basis for any statistical differences and the need for any appropriate corrective actions. Poisson rate test results that indicate the co-located samples are similar at the 95 percent confidence interval will be considered good. Test results in the 90 to 95 percent confidence interval range will be considered acceptable, and test results that fall below the 90 percent confidence interval will be considered poor for similarity. If test results are below the 90 percent interval, Tetra Tech will investigate the basis for the discrepancy and take corrective action in sampling and/or analysis of the samples. Tetra Tech will generally report the results from the original sample (as opposed to co-located sample or laboratory recount sample results). A possible exception to this rule is an ESAT inter-laboratory recount result. If, during validation, an inter-laboratory recount result is deemed to be more representative than the original result, Tetra Tech will discuss these findings with DEQ and report whichever result is determined to be most representative.

Tetra Tech has reviewed and will continue to review the results for all field blanks for adherence to the QC limits specified in SOP LB-000029b (SRC 2007). All of the field blank results to date are within QC limits.

### 3.3.3 Statement on Data Quality

The objectives of the AAS were to collect the data necessary to determine: (1) whether the levels of LA in outdoor ambient air contribute a risk of cancer or non-cancer effects, either alone or in combination with other exposure pathways; (2) whether that risk is within an acceptable risk range under a reasonable maximum exposure scenario; and (3) whether the data identify any significant differences of the levels of LA in outdoor ambient air as a function of time or location in OU7. The AAS DQOs are presented in the AAS Work Plan (Tetra Tech 2009b).

To address AAS objectives, Tetra Tech is collecting and analyzing outdoor ambient air samples for LA asbestos. The results will be used in the HHRA for OU7. A total of 323 outdoor ambient air samples (including field duplicates) had been collected as of December 24, 2010. Sample collection is expected to continue through October 2011. (To insure a minimum of 20 to 25 detected results, a target sample size in the range of at least 150 to 200 discrete samples was planned.)

To ensure accuracy and reliability, AAS field data and analytical results are being reviewed and verified in accordance with the procedures described in the AAS Work Plan (Tetra Tech 2009b). Although sample collection and data review and verification are not yet completed, data quality to date appears to be adequate for supporting exposure scenario and risk assessment calculations.

### 3.4 DEVIATIONS FROM THE AAS WORK PLAN

The following deviations from the AAS Work Plan were implemented in 2010. All associated TFO forms were submitted to the DEQ Project Officer for review and approval. The signed copies were placed in the DEQ Troy Information Center office.

#### TFO-00002

Due to periodic overloading of the sample filters, TFO-00002 was implemented to change the sampling pump air flow from 3 liters per minute to 2 liters per minute (resulting in a decrease in total air volume sampled from 21,600 to 14,400 liters). Reducing the air flow eliminated the incidence of overloaded

sample filters and still allowed for generation of high quality data that meets sensitivity analysis requirements without counting of excessive filter grid openings during TEM analysis. This modification was implemented as a permanent procedural change beginning in Year 1, Sample Period 13. A copy of TFO-00002 is provided Appendix A.

#### TFO-00003

This TFO requested that ambient air monitoring stations be relocated for Year 2 sampling. The relocation would allow for more comprehensive coverage of the four air zones identified in OU7. This modification was performed to provide additional data to support the human health risk analysis related to ambient air exposure. A copy of TFO-00003 is provided in Appendix A.

#### TFO-00004

This TFO provided for modifications to sampling protocol involving the rotation of the co-located sampling station (Station TQC) among all of the seven ambient air sampling stations for Year 2 sampling. Analytical protocol was not impacted; however, moving the co-located sampling station allowed for an evaluation of analytical variability at all seven monitoring stations. Co-located field samples were collected (station TQC) from rotating station locations for each sample period throughout quarter 5. Station TQC was placed next to the monitoring stations. Station TQC was moved after each sampling period (beginning with monitoring station T11) and was cycled through each of the remaining stations (T12, T13, T14, T15, T16, T17). After cycling through station 17, station TQC was returned to station T11 to start the process anew. Cycling of station TQC will continue throughout Year 2 so that a minimum of five co-located samples will be collected at each of the seven monitoring stations. A copy of TFO-00004 is provided in Appendix A.

#### Analytical Data Review and Verification

Tetra Tech conducted review and verification of the analytical data from sampling periods 1 through 23 in general accordance with SOP EPA-LIBBY-09 (SRC 2008) with minor deviations for OU7. The SOP specifies data review and data entry verification of a minimum of 10 percent of the sample records. It also specifies criteria for selecting sample records for review and verification.

However, one hundred percent of the period 1 through 5 sample records, approximately 50 percent of the period 6 through 18 sample records, and approximately 25 percent of the period 19 through 23 sample records underwent data review and data entry verification. For these records (Periods 1 through

23), rather than random selection from the OU7 Scribe database as described in the SOP, records were hand selected for review and verification based on result type (detected LA) and sample type (field duplicate pairs and field blanks). This deviation occurred because the sample records had not been published in the Scribe database, which would have allowed for the random selection process described in the SOP. For periods 24 through 41, 10 percent of the sample records underwent data review and data entry verification. These records were randomly selected, in general accordance with SOP EPA-LIBBY-09 (SRC 2008).

Additionally, the final step in the verification of data transfer process is to verify that the data in the EDDs were loaded into the Scribe database without error or omission. This had not been done as of the end of 2010, since the analytical data had not yet been published to the Scribe database.

#### 4.0 FIELD RESULTS AND NATURE AND EXTENT OF CONTAMINATION

This section summarizes the TAPE and AAS field activities and the data obtained from these investigations, from January 1, 2010 through December 31, 2010. The TAPE Work Plan was implemented in April 2007 and the AAS Work Plan was implemented in September 2009; both investigations are currently on-going. The intent of these investigations is to gather sufficient and reliable data such that the nature and extent of LA contamination in OU7 can be evaluated and the associated risks to human health assessed. In addition, TAPE data has been used to identify parcels meeting the EPA removal action levels (EPA 2003). Data obtained from the AAS investigation will primarily be used to determine whether levels of LA in outdoor ambient air contribute a risk of cancer or non-cancer effects. The TAPE and AAS data will eventually be used in support of a site-wide risk assessment and determination of remedial alternatives.

Section 4.1 provides 2010 field results associated with the TAPE investigation. Section 4.2 provides an update on the nature and extent of LA contamination within OU7 as compared to EPA removal action levels and DEQ selection criteria. It also discusses the selection of OU7 parcels for removal and describes the removal activities that occurred in 2010. Section 4.3 presents the sampling activities, data acquisition, and analytical data from the AAS investigation in 2010.

##### 4.1 TROY ASBESTOS PROPERTY EVALUATION RESULTS

TAPE investigation results and associated activities for 2010 are presented in the following sections. Between January 1, 2010 and December 31, 2010, a total of 33 parcels were inspected, including all parcels within the OU7 boundary shown on Figure 4-1, for which property owners' granted permission to inspect. Fifteen of the parcels inspected under the TAPE in 2010 were located outside the OU7 boundary. These inspections were performed on a case-by-case basis due to unique circumstances such as owner transport of buildings or vermiculite from Libby to the parcel, or if the owner had knowledge of such an event. For the purposes of this RI, these parcels will be considered as part of OU7 and are included in the total TAPE inspection count of 33 parcels as of December 31, 2010. Tetra Tech performed one ERS action and Project Resources, Inc. (PRI) performed three ERS actions in 2010. ERS actions are discussed in Section 4.1.5 below. The total number of parcels in the TAPE geodatabase as of December 31, 2010 was 1,598, including 51 parcels outside of the OU7 boundary and 316 road and alley parcels.

The OU7 Scribe database is used to store, manage, and retrieve TAPE data. The OU7 Scribe database is dynamic; data have been corrected or updated over the course of the project as a result of modifications to TAPE sampling objectives, additional information gained from parcel revisits (i.e., visible vermiculite re-inspections, aggressive attic entry), and as part of the TAPE data verification process (Section 2.4.1). To present TAPE data by year, database queries were developed using the initial inspection date for each parcel. This eliminated the possibility of counting a parcel or data record twice. The data presented in the sections below have been extracted from the OU7 Scribe database. Appendix C presents a summary of the TAPE investigation results.

#### 4.1.1 2010 Sampling

Results of the 2010 TAPE investigation are grouped into four categories: site access, attic and interior inspection, soil sampling, and ERS activities. Topics are presented in the following sections.

#### 4.1.2 Site Access

Tetra Tech was not requested by the DEQ to conduct a mass mailing of access agreements to OU7 residents in 2010. The majority of properties had undergone a TAPE inspection between 2007 and 2009, and with the level of public outreach within OU7, it was determined that interested property owners would contact the DEQ Troy Information Center directly for inspection scheduling. Property owners who had returned a signed access agreement previously but did not get scheduled for a TAPE inspection in 2009 were contacted by the CIC at the beginning of the 2010 field season for scheduling.

As discussed in the Draft Final RI Report (Tetra Tech 2010e), the access status for a property (i.e., granted, limited, denied) fluctuates as property ownership changes. In addition to the access agreements received from the 2007-2009 yearly access mailings, access agreements are also obtained from walk-ins to the DEQ Troy Information Office and from door-to-door solicitations of owners whose addresses were listed incorrectly (or were unknown) in the tax database. The Troy Owner Access Database (TOAD) tracks each of the changes to parcel status. As of December 31, 2010, the parcel status for all parcels was the following:

Granted = 952  
Limited = 10  
Denied = 27

#### 4.1.3 Attic and Interior Inspection

The visual inspection of interior living areas and attic spaces (when accessible) continued as part of the TAPE in 2010. Tetra Tech inspected 33 properties in 2010, encompassing 24 primary buildings and 25 secondary buildings. Of these, 24 buildings did not have attics. The attic of one building was inaccessible. The remaining attics were accessed and inspected for the presence or absence of attic insulation and the type of insulation. Five of the parcels initially inspected in 2010 had vermiculite insulation in a building attic. Field teams also identified 6 properties with visible vermiculite in an indoor living space.

#### 4.1.4 Soil Sampling

As part of the TAPE inspection activities in 2010, Tetra Tech identified and visually inspected the following use areas:

- Common Use Areas = 27
- Limited Use Areas = 23
- Specific Use Areas = 28
- Non-Use Areas = 15

A total of 234 soil samples and 8 field duplicate samples were collected in 2010 from the use areas listed above. Tetra Tech also visually inspected and sampled interior crawlspace areas (if safe and accessible).

A total of 34 interior soil samples were collected in 2010.

#### 4.1.5 Environmental Resource Specialist Activities

Tetra Tech and PRI conducted ERS activities at 3 parcels in 2010; all three of these parcels were outside of the OU7 boundary. The ERS actions in 2010 were similar to those from previous years and involved temporarily isolating potential LA-containing material from residents or workers. Copies of the ERS reports were scanned and placed in the individual electronic archive folders for the pertinent properties. A note indicating that an ERS response had been conducted at the property was entered into the OU7 Scribe database. A copy of the ERS response reports is included in Appendix B.



#### 4.2 LIBBY AMPHIBOLE ASBESTOS CONTAMINATION IN OU7, THE SELECTION OF PARCELS FOR REMOVAL ACTION, AND POST-REMOVAL CLEARANCE AND CONFIRMATION SAMPLING

This section presents 2010 TAPE analytical results and reviews the results with reference to the EPA and DEQ documents guiding removal actions in OU7; specifically, the EPA *Libby Asbestos Site Residential/Commercial Cleanup Action Level and Clearance Criteria Technical Memorandum* (EPA 2003), the DEQ *Libby Asbestos Site Troy OU7 Residential/Commercial Cleanup Criteria Specific Use Area visible vermiculite Action Level Technical Memorandum* (DEQ 2009a), and the DEQ *Libby Asbestos Site Troy OU7 Removal Parcel Status* (DEQ 2009b) memorandum.

##### 4.2.1 TAPE Analytical Results

Soil was the only medium submitted for analysis of LA fibers during TAPE inspections in 2010. Exterior soil samples have been collected from UAs at all TAPE inspected properties since project inception in 2007. In addition, indoor soil samples were collected from safely accessible crawlspaces and dirt floors in primary and secondary buildings. Soil analytical results for all field soil samples for January 1, 2010 through December 31, 2010, are presented in Table 4-1 below in accordance with the EPA bin categories that outline the percentage of LA detected in a given soil sample. A more thorough description of the bin categories is in the *Libby Asbestos Site Residential/Commercial Cleanup Action Level and Clearance Criteria Technical Memorandum* (EPA 2003). The bin categories for LA concentration in soil are defined as:

- Bin A = Non-Detect
- Bin B1 = Trace LA (less than 0.2 percent)
- Bin B2 = Between 0.2 percent and 1 percent
- Bin C = LA greater than or equal to 1 percent by weight (EPA action level for removal)

A total of 276 exterior and interior soil samples were collected in 2010. There were 201 exterior soil samples and 26 interior soil samples with a Bin A designation (non-detect). A trace amount of LA, less than 0.2 percent (Bin B1), was identified in 41 exterior soil samples and 8 interior soil samples. There were no soil samples from 2010 with LA concentrations between 0.2 percent and 1 percent (Bin B2).

It should be noted that no Bin C results have been detected for any of the exterior or interior soil samples collected as part of the TAPE.

**TABLE 4-1**  
**2010 TAPE SOIL ANALYTICAL RESULTS**

| 2010       |                   |
|------------|-------------------|
| Bin Result | Number of Samples |
| Bin A      | 227               |
| Bin B1     | 49                |
| Bin B2     | 0                 |
| Bin C      | 0                 |
| Total      | 276               |

**Notes:**

Results include both exterior and interior soil samples and QA/QC samples.

#### 4.2.2 Comparison of TAPE Results to EPA Removal Action Levels

Two of the primary objectives of the TAPE investigations are to identify parcels that meet EPA removal action levels and to provide reliable data on LA contamination in support of OU7 RDI and removal activities. The goal is to address those parcels with LA contamination at levels that present a sufficient health risk and minimize that risk by completing a removal action. As discussed in Section 3.4 of the Draft Final RI Report (Tetra Tech 2010e), the EPA has established removal action levels that allow investigators to determine whether a removal action is warranted (EPA 2003) and has been utilizing these action levels in OU4 (Libby) since 2002. Removal is assessed by determining source contamination in one or more of the following areas: (1) attic or interior walls (attics/walls), (2) indoor living space (interiors), or (3) outdoor soils (soils). A summary of TAPE investigation data between January 1, 2010 and December 31, 2010 meeting the EPA removal action levels is presented below, along with the cumulative count of parcels meeting these criteria since TAPE project inception in 2007:

##### OU7 TAPE Attic/Walls

- Total number of parcels with visual confirmation of vermiculite insulation: 2010 = 5; Cumulative = 86

##### OU7 TAPE Interiors

- Total number of parcels with visual confirmation of vermiculite (visible vermiculite) in an indoor living space: 2010 = 6; Cumulative = 59
- Total number of indoor dust samples collected with a LA concentration greater than 5,000 (s/cm<sup>2</sup>): 2010 = 0; Cumulative = 6

### OU7 TAPE Soils

- Total number of SUAs with visual confirmation of vermiculite (visible vermiculite): 2010 = 20; Cumulative = 302
- Total number of exterior soil samples with an analytical LA concentration greater than or equal to 1 percent: 2010 = 0; Cumulative = 0

#### 4.2.3 OU7 Parcel Selection for Removal Action

In addition to the EPA removal action criteria presented in the previous section, the DEQ reviews OU7 properties against the additional lines of evidence described below. Background information regarding process is in the Final Libby Asbestos Site Troy Operable Unit 07 Residential/Commercial Cleanup Criteria, Specific Use Area Visible Vermiculite Action Level Technical Memorandum (DEQ 2009a) that is an attachment to this report. The majority of properties in OU7 underwent a TAPE inspection between 2007 and 2009. In November 2009, the DEQ evaluated these parcels against the EPA removal action levels and additional lines of evidence (see attachment) to generate a list of OU7 properties where RDI and removal action was warranted. The requirements were:

#### EPA Removal Action Levels:

- Visible Vermiculite in a Living Space = Yes
- Visible Vermiculite in an Attic = Yes
- Visible Vermiculite in a SUA = Yes
- Field soil sample (interior or exterior) with an analytical result = Bin B2 or Bin C
- Dust concentration greater than or equal to 5,000 s/cm<sup>2</sup>

#### DEQ Additional Lines of Evidence:

- Any knowledge of former miners, close relatives of miners, or any highly exposed persons living or visiting the building = Yes
- Is the resident, past or present, diagnosed with an asbestos-related disease = Yes
- To the best of your knowledge, was vermiculite from the mine used in, or around, your home = Yes
- Has the resident/business purchased any Libby vermiculite materials from W.R. Grace in the past = Yes
- Has the property been used for a for-profit enterprise of distributing, treating, storing, or disposing of Libby vermiculite = Yes
- Are there Libby vermiculite additives in any of the building materials = Yes

The DEQ Project Officer reviewed each parcel meeting the above requirements to determine the removal action was necessary. This included review of the analytical results, electronic data archive records from visual inspections at the parcel (logbook, property sketch, photographs, and ERS reports), and all pertinent data from the OU7 Scribe database (DEQ 2009b). Based on the requirements and parcel review, the DEQ identified parcels eligible for interior removal only (71), exterior removal only (16), and both interior and exterior removal actions (15), for a total of 102 parcels eligible for removal actions. DEQ then provided the EPA with the list of parcels to plan for the 2010 OU7 RDI and removal activities. Figure 7-2 of the Draft Final RI Report (Tetra Tech 2010e) spatially depicts the parcels that were identified for removal action in OU7 during 2010.

#### 4.2.4 Completed OU7 Removal Actions in 2010

Tetra Tech was provided with the list of properties eligible for removal action at the beginning of the 2010 field season and coordinated RDI efforts with the property owners. The objective of the RDI process was to collect additional data such that remaining data gaps on the presence of LA and/or source of LA from TAPE inspections could be addressed and removal activities could be performed. A RDI was conducted at each participating property (some homeowners denied or deferred before removal activities were initiated). The exterior portion of the RDI inspection was performed by Tetra Tech and the interior portion of the RDI inspection was performed by a contractor to the USACE. Tetra Tech reviewed field and analytical inspection data prior to providing results of the RDI to the USACE contractor responsible for preparing design drawings and performing removal activities. Once design drawings had been prepared, Tetra Tech again reviewed the RDI results to ensure the removal was based on accurate information. Removal activities then commenced and were performed by the USACE contractor.

As a result of new TAPE inspections conducted during the 2010 field season, some parcels were added to the removal list generated by the DEQ at the end of 2009. These parcels were added due to the presence of vermiculite in a living area or in an exterior soil to an extent where removal action may have been necessary. In this instance, these parcels were added to the removal list and a RDI was performed to further delineate the extent of contamination. In total, 12 parcels were added to the DEQ removal list in 2010, increasing the number of parcels eligible for removal from 102 (beginning of 2010) to 114 (end of 2010).

In general, RDI analytical results supported TAPE and RDI field observations. All parcels on the original removal list remained on the list following the RDI. Those parcels identified for removal following an initial TAPE inspection in 2010 also remained on the list following RDI activities.

In total, 84 removal actions were completed during 2010. Of these, 49 were interior removals only, 14 were exterior removals only, and 15 were a combination of interior and exterior removal. There were six properties with building demolition activities only. Nine of the property owners on the removal list deferred removal action on their property until 2011. Seventeen property owners declined removal action in 2010, and Tetra Tech was unable to contact 4 property owners regarding removal activities. Table 4-2 below summarizes this information. Figure 4-2 depicts the removal activities for calendar year 2010.

**TABLE 4-2  
2010 SUMMARY OF REMOVAL ACTIONS**

| Type of Removal Action | Identified in 2009 | Identified in 2010 | Completed in 2010 | Parcels Remaining on Removal List |
|------------------------|--------------------|--------------------|-------------------|-----------------------------------|
| Interior Only          | 71                 | 0                  | 49                | ---                               |
| Exterior Only          | 15                 | 7                  | 14                | ---                               |
| Combination            | 16                 | 4                  | 15                | ---                               |
| Demolition             | ---                | 1                  | 6                 | ---                               |
| Deferred               | ---                | ---                | ---               | 9                                 |
| Declined               | ---                | ---                | ---               | 17                                |
| No Contact             | ---                | ---                | ---               | 4                                 |
| <b>TOTAL</b>           | <b>102</b>         | <b>12</b>          | <b>84</b>         | <b>30</b>                         |

The USACE contractor who performed the removal activities maintained detailed records on the removal work at each property, such as the volume of interior material (i.e., insulation) removed and the volume of soil removed. Appendix D provides a summary of this information for reference.

#### 4.2.5 Post-Removal Clearance and Confirmation Sampling

Following completion of a removal action at a property, clearance air samples or confirmation soil samples, as appropriate, were collected and analyzed to determine whether the removal activities were effective. Each sample type is described below.

### Clearance Air Samples

If a property required the removal of vermiculite insulation, LA-contaminated interior dust or soil floors, or LA-contaminated building materials, clearance air samples were collected following removal activities to determine if interior LA contamination levels were reduced to project-specific action levels.

Clearance air samples were collected from living spaces and non-living spaces (e.g., attics) where LA-contaminated media were removed. Secondary structures were sampled in accordance with building-type designation as described in the response action work plan (RAWP) (Project Resources, Inc. [PRI] 2011). After the contractor removed the contaminated material, a third party independent contractor (TPIC) inspected the area to determine if clearance air sampling could commence. If sample results did not meet project-specific action levels, additional cleaning was performed and clearance samples were re-collected. Once the action levels were met, the area was designated as adequately cleaned and restoration activities began.

Prior to collecting clearance air samples, a TPIC field member determined whether the area being sampled was considered a living space or an attic space to compare the data collected to the project-specific action levels specified for these two area types. Five clearance samples were collected in each area where a response action was performed. Each clearance air sample was collected and analyzed in accordance with TEM AHERA sampling guidance (EPA 1987), with applicable project-specific laboratory modifications.

### Confirmation Soil Samples

If a property required removal of vermiculite-containing or LA-contaminated soil, confirmation soil samples were collected following removal activities to determine if contaminated soils were removed to project-specific clearance criteria.

Following the excavation of contaminated soils in the removal area and before confirmation soil sampling, the excavated area and sidewalls were visually inspected for high concentrations of vermiculite. Since the presence of high levels of vermiculite is a likely indicator of LA, further excavation may have been required prior to collecting confirmation soil samples. Once an excavation was cleared through a visual inspection, a confirmation soil sample, including documentation of any remaining vermiculite observed in the sample area, was collected to determine if cleanup goals were achieved.

If the excavation extended to the maximum depth as described in the RAWP (PRI 2011), the TPIC collected confirmation soil samples at the maximum excavation depth.

Each confirmation soil sample was collected as a 30-point composite surface soil sample to characterize an area where contaminated soil was removed and document any remaining vermiculite. Each sample aliquot was collected from 0 to 2 inches below the surface of the completed excavation and consisted of nearly equal portions of soil from 30 locations in the delineated sample area. It was up to the discretion of the TPIC to decide the number of samples required to characterize the excavated area. However, to maintain consistency between the sampling teams, at least one composite sample was collected for every 2,500 square feet of excavation area.

Individual confirmation soil samples may have included composite points from different use areas (e.g., yard and flowerbed, yard and garden) as long as all areas were excavated to design depth and passed visual inspection. If excavation advanced more than 10 feet beyond a computed boundary to a neighboring property with a different address, soil clearance samples were collected under the different address with a separate field sampling data sheet (FSDS), red-line drawing, and project completion checklist form (PCC). All confirmation soil samples were analyzed by polarized light microscopy (PLM) (NIOSH 1994).

#### Soil Sampling for Areas Not Excavated to Design Depth

Excavation along foundations, curbs and roads, sidewalks, and around trees presented challenges for the removal contractor. Excavation along or adjacent to these areas may have caused additional hazards such as structure failure, slope failure, and falling trees. Therefore, excavation in these areas may have not been advanced to the design depth specified in the site-specific removal work plan. These areas may have been sampled separately or in combination with other similar areas as necessary. Although no additional excavation may have been feasible, samples were collected for documentation. Combining multiple areas not excavated to design depth as one sample was acceptable in this instance. However, samples collected in these areas are stand-alone (to be more representative of the areas not excavated to design depth) and were not combined with sample aliquots from areas that were excavated to design depth.

Excavation around trees was completed in accordance with the RAWP (PRI 2011) and the site-specific removal work plan to the extent possible without sacrificing the integrity of the root system. If sampling was not feasible due to root congestion, a visual inspection, as outlined in SOP CDM-Libby-16, was performed and quantities of vermiculite documented as low or intermediate. If high concentrations of vermiculite were present, TPIC obtained approval from the government representative to allow excavation to continue.

#### Soil Sampling Under Structures

If a structure (e.g., shed, deck, etc.) was moved during excavation and the footprint of the structure was less than 2,500 square feet, composite points of soil from the original structure's location may have been combined with composite points of soil from the surrounding area to a maximum of 2,500 square feet of the combined areas. If a structure was not moved during excavation, a separate discreet soil sample was collected in the footprint of the structure, and was not combined with samples from the surrounding excavation area.

### 4.3 OUTDOOR AMBIENT AIR STUDY RESULTS

The following sections present the results The AAS monitoring activities and schedule for calendar year 2010 (December 29, 2009, through December 31, 2010) are summarized in Section 4.3.1. Analytical AAS results from project inception through calendar year 2010 are summarized Section 4.3.2.

#### 4.3.1 Monitoring Activities and Schedule

AAS monitoring began on October 30, 2009, and continued through 2010. Calendar year 2010 encompasses sample period 7 (quarter 1), which began on December 29, 2009, through sample period 41 (quarter 5), which ended on December 24, 2010. Each quarter consisted of nine 5-day sampling periods, separated from adjacent periods by approximately five non-sampling days.

AAS monitoring activities and schedule from project inception through the end of 2009 were described in the Draft Final RI Report (Tetra Tech 2010e). Monitoring activities and schedule for 2010 have been described in the following AAS quarterly reports:

- *Final First Quarter Memorandum, Operable Unit Number 7 of the Libby Asbestos Superfund Site*, dated February 2010 (Tetra Tech 2010a),



- *Final Quarter 2 and Quarter 3 Memorandum, Operable Unit Number 7 of the Libby Asbestos Superfund Site*, dated September 2010 (Tetra Tech 2010c),
- *Final Quarter 4 Memorandum, Operable Unit Number 7 of the Libby Asbestos Superfund Site*, dated December 2010 (Tetra Tech 2010d),
- *Final Quarter 5 Memorandum, Operable Unit Number 7 of the Libby Asbestos Superfund Site*, dated February 2011 (Tetra Tech 2011).

The 2010 AAS monitoring activities and schedule are briefly summarized below, organized by quarter. Field data and observations were recorded daily on FSDSs; copies of which were provided as appendices in the associated AAS quarterly reports mentioned above (Tetra Tech 2010a; 2010c; 2010d; 2011).

#### Quarter 1

This section briefly summarizes the Quarter 1 schedule of AAS monitoring activities that occurred during 2010. The portion of Quarter 1 AAS monitoring that occurred in 2009 is discussed in the Draft Final RI Report (Tetra Tech 2010e) and the Final First Quarter Memorandum (Tetra Tech 2010a) and consisted of sample periods 1 through 6. The portion of Quarter 1 AAS sampling that occurred in 2010 began with sample period 7 on December 29, 2009 and ended with sample period 9 on January 22, 2010. Quarter 1 AAS monitoring consisted of three five-day sampling periods separated by five off days between each period. Calendar year 2010 Quarter 1 sample periods and dates are summarized in Table 4-3 below.

TABLE 4-3  
OU7 OUTDOOR AMBIENT AIR STUDY SAMPLING  
QUARTER 1 SAMPLE PERIODS AND DATES

| Sample Period | Dates                                |
|---------------|--------------------------------------|
| 7             | December 29, 2009 to January 2, 2010 |
| 8             | January 8, 2010 to January 12, 2010  |
| 9             | January 18, 2010 to January 22, 2010 |

#### Quarter 2 and Quarter 3

This section briefly summarizes the Quarter 2 and 3 schedules of AAS monitoring activities. Quarter 2 AAS monitoring activities were initiated on January 28, 2010, and Quarter 3 AAS monitoring activities were initiated on May 7, 2010. Both are described in the *Final Quarter 2 and Quarter 3 Memorandum*,

Operable Unit Number 7 of the Libby Asbestos Superfund Site, dated September 2010 (Tetra Tech 2010c).

Both Quarter 2 and Quarter 3 AAS monitoring consisted of nine five-day sampling periods, generally separated by five off days between each period. Quarter 2 monitoring began with sample period 10 on January 28, 2010, and ended with sample period 18, on May 1, 2010. Quarter 3 monitoring began with sample period 19 on May 7, 2010, and ended with sample period 27, on July 30, 2010. Quarter 2 and 3 sample periods and dates are summarized in Table 4-4 below.

**TABLE 4-4  
OU7 OUTDOOR AMBIENT AIR SAMPLING  
QUARTER 2 AND QUARTER 3 SAMPLE PERIODS AND DATES**

| Sample Period | Dates                                       |
|---------------|---|
| Quarter 2     |   |
| 10            | January 28, 2010 through February 1, 2010   |
| 11            | February 7, 2010 through February 11, 2010  |
| 12            | February 17, 2010 through February 21, 2010 |
| 13            | March 6, 2010 through March 10, 2010        |
| 14            | March 16, 2010 through March 20, 2010       |
| 15            | March 28, 2010 through April 1, 2010        |
| 16            | April 7, 2010 through April 11, 2010        |
| 17            | April 17, 2010 through April 21, 2010       |
| 18            | April 27, 2010 through May 1, 2010          |
| Quarter 3     |   |
| 19            | May 7, 2010 through May 11, 2010            |
| 20            | May 17, 2010 through May 21, 2010           |
| 21            | May 27, 2010 through May 31, 2010           |
| 22            | June 6, 2010 through June 10, 2010          |
| 23            | June 16, 2010 through June 20, 2010         |
| 24            | June 26, 2010 through June 30, 2010         |
| 25            | July 6, 2010 through July 10, 2010          |
| 26            | July 16, 2010 through July 20, 2010         |
| 27            | July 26, 2010 through July 30, 2010         |

#### Quarter 4

This section briefly summarizes the Quarter 4 schedule of AAS monitoring activities. Quarter 4 AAS monitoring activities were initiated on August 5, 2010, and are described in the *Final Quarter 4 Memorandum, Operable Unit Number 7 of the Libby Asbestos Superfund Site*, dated December 2010 (Tetra Tech 2010d).

Quarter 4 AAS monitoring consisted of nine five-day sampling periods, generally separated by five off days between each period. Quarter 4 monitoring began with sample period 28 on August 5, 2010, and ended with sample period 36, on October 28, 2010. Quarter 4 sample periods and dates are summarized in Table 4-5 below.

**TABLE 4-5  
OU7 OUTDOOR AMBIENT AIR SAMPLING  
QUARTER 4 SAMPLE PERIOD DATES**

| Sample Period | Dates   |
|---------------|---|
| 28            | August 5, 2010 through August 9, 2010         |
| 29            | August 15, 2010 through August 19, 2010       |
| 30            | August 25, 2010 through August 29, 2010       |
| 31            | September 4, 2010 through September 8, 2010   |
| 32            | September 14, 2010 through September 18, 2010 |
| 33            | September 24, 2010 through September 28, 2010 |
| 34            | October 4, 2010 through October 8, 2010       |
| 35            | October 14, 2010 through October 18, 2010     |
| 36            | October 24, 2010 through October 28, 2010     |

#### Quarter 5

This section briefly summarizes the Quarter 5 schedule of AAS monitoring activities. Quarter 5 AAS monitoring activities were initiated on November 10, 2010, and are described in the *Final Quarter 5 Memorandum, Operable Unit Number 7 of the Libby Asbestos Superfund Site*, dated February 22, 2011 (Tetra Tech 2011).

This section briefly summarizes the Quarter 5 schedule of AAS monitoring activities during 2010. The portion of quarter 5 AAS monitoring in 2010 consisted of five 5-day sampling periods, generally separated by five off days between each period. It began with sample period 37 on November 10, 2010, and ended with sample period 41, on December 24, 2010. The sample periods and dates for Quarter 5 are summarized in Table 4-6.

**TABLE 4-6**  
**OU7 OUTDOOR AMBIENT AIR SAMPLING**  
**QUARTER 5 SAMPLE PERIODS AND DATES**

| Sample Period | Dates                                       |
|---------------|---|
| 37            | November 10, 2010 through November 14, 2010 |
| 38            | November 20, 2010 through November 24, 2010 |
| 39            | December 1, 2010 through December 5, 2010   |
| 40            | December 10, 2010 through December 14, 2010 |
| 41            | December 20, 2010 through December 24, 2010 |

#### 4.3.2 Analytical Results

This section summarizes the AAS analytical data acquired from project inception (October 30, 2009) through the portion of Quarter 5 in 2010 (sampling periods 1 through 41). Data acquired prior to calendar year 2010 are included in this RI Addendum report because they had not been finalized at the time the Draft Final RI Report (Tetra Tech 2010e) was drafted.

A detailed discussion of AAS analytical results are presented in the applicable AAS program quarterly reports (Tetra Tech 2010a; 2010c; 2010d; 2011) and are only briefly summarized herein. The complete set of analytical results for AAS sampling periods 1 through 41, as well as a spreadsheet with the data review and data entry verification findings for these sampling periods will be provided in the final RI report.

##### Quarter 1

Three LA fibers were found in sample TA-0001, a field duplicate sample collected from the AAS sampling station at the DEQ office in Troy on October 30, 2009. Four LA fibers were found in the original sample (TA-0004) collected on this date from this location. Five LA fibers were found in sample TA-0003, collected from AAS sampling station T5 (County shops at Highway 2 and Sunset Road County) on October 30, 2009. All three samples were overloaded and underwent an indirect preparation method. One LA fiber was found in sample TA-0078 collected at station T2. The remaining samples collected during Quarter 1 had no countable LA fibers. Quarter 1 detected results are summarized in Table 4-7 below:

TABLE 4-7  
OU7 AAS SAMPLING  
QUARTER 1 DETECTED RESULTS

| Location | Location Comment                               | Sample No. | Sample Date | Sample Type     | No. Of Structures | LA Concentration (s/cc) | Sampling Period |
|----------|--|------------|-------------|-----------------|-------------------|-------------------------|-----------------|
| T4QC     | DEQ QC   | TA-0001    | 30-Oct-09   | Field Duplicate | 3                 | 1.20E-04                | 1               |
| T5       | Highway 2 and Sunset Road                      | TA-0003    | 30-Oct-09   | Field Sample    | 5                 | 1.75E-04                | 1               |
| T4       | DEQ  | TA-0004    | 30-Oct-09   | Field Sample    | 4                 | 1.56E-04                | 1               |
| T2       | Fire Station at Forest Drive and Vacation Road | TA-0078    | 18-Jan-10   | Field Sample    | 1                 | 3.77E-05                | 9               |

Notes:

DEQ      Montana Department of Environmental Quality  
QC      Quality control  
LA      Libby amphibole  
s/cc      Structures per cubic centimeter

Quarter 2

Two LA fibers were found in the sample collected from location T1 during period 12 and one LA fiber was found in the sample collected from location T1 during period 17. One LA fiber each was found in the samples collected from location T2 during periods 10, 12, and 15. One LA fiber was found in the sample collected from location T3 during period 12. One LA fiber each was found in the samples collected from location T4 during periods 13 and 18. Four LA fibers were found in the field duplicate collected from location T4QC during period 11 and 2 LA fibers were found in the field duplicate collected from location T4QC during period 14. One LA fiber was found in the sample collected from location T6 during period 14. One LA fiber each was found in the samples collected from location T7 during periods 12 and 14. The remaining samples collected during periods 10 to 18 had no detectable LA fibers.

Quarter 2 detected results are summarized in the Table 4-8:

TABLE 4-8  
OU7 AAS SAMPLING  
QUARTER 2 DETECTED RESULTS

| Location | Location Comment  | Sample No. | Sample Date | Sample Type     | No. Of Structures | LA Concentration (s/cc) | Sampling Period |
|----------|---|------------|-------------|-----------------|-------------------|-------------------------|-----------------|
| T2       | Fire station at Forest Drive and Vacation Road          | TA-0087    | 1/28/10     | Field Sample    | 1                 | 3.81E-05                | 10              |
| T4QC     | DEQ QC  | TA-0099    | 2/7/10      | Field Duplicate | 4                 | 1.58E-04                | 11              |
| T1       | Residential property at North River Road                | TA-0104    | 2/17/10     | Field Sample    | 2                 | 7.37E-05                | 12              |
| T2       | Fire station at Forest Drive and Vacation Road          | TA-0105    | 2/17/10     | Field Sample    | 1                 | 3.77E-05                | 12              |
| T3       | Water treatment plant at north end of Roosevelt Park    | TA-0106    | 2/17/10     | Field Sample    | 1                 | 3.68E-05                | 12              |
| T7       | Residential property at Hummingbird Way and Bighorn Way | TA-0110    | 2/17/10     | Field Sample    | 1                 | 3.63E-05                | 12              |
| T4       | DEQ   | TA-0115    | 3/6/10      | Field Sample    | 1                 | 3.74E-05                | 13              |
| T4QC     | DEQ QC  | TA-0125    | 3/16/10     | Field Duplicate | 2                 | 7.15E-05                | 14              |
| T6       | Water tower at Iron Creek Rd. ¾ mile south of Hwy. 2    | TA-0127    | 3/16/10     | Field Sample    | 1                 | 3.57E-05                | 14              |
| T7       | Residential Property at Hummingbird Way at Bighorn Way  | TA-0128    | 3/16/10     | Field Sample    | 1                 | 3.63E-05                | 14              |
| T2       | Fire Station at Forest Drive and Vacation Road          | TA-0131    | 3/28/10     | Field Sample    | 1                 | 3.96E-05                | 15              |
| T1       | Residential property at North River Road                | TA-0148    | 4/17/10     | Field Sample    | 1                 | 3.96E-05                | 17              |
| T4       | DEQ   | TA-0160    | 4/27/10     | Field Sample    | 1                 | 3.96E-05                | 18              |

Notes:

DEQ Montana Department of Environmental Quality  
 QC Quality control  
 LA Libby amphibole  
 s/cc Structures per cubic centimeter

### Quarter 3

No LA fibers were detected in any of the Quarter 3 (sampling periods 19 to 27) samples.

### Quarter 4

One LA fiber was detected in the sample (TA-0316) collected during Quarter 4 (sampling periods 28 to 36). The sample was collected from Station T5 during sampling period 35. The concentration of LA in this sample is 3.97E-05. No LA fibers were detected in any of the other Quarter 4 samples.

### Quarter 5

No LA fibers were detected in any of the Quarter 5 samples collected in 2010 (sampling periods 37 to 41).

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

### 5.1 CONCLUSIONS

The objectives of the RI for OU7 of the Libby Asbestos Superfund Site were to adequately characterize the nature and extent of LA contamination by investigating building interiors, soil, and outdoor ambient air; to provide community support during the investigations; identify parcels that meet the EPA removal action levels; collect and provide reliable data on LA contamination to support RDI and removal action activities; gather sufficient data for a future site-wide risk assessment; and allow for effective development of alternative remedies to be included in an FS.

Tetra Tech conducted TAPE investigations on 33 parcels between January 10, 2010 and December 31, 2010. Fifteen (15) of the inspections occurred at parcels outside of the OU7 boundary. The TAPE investigations included the visual inspection of 49 primary and secondary buildings, and the collection of 241 exterior soil samples, and 34 interior soil samples (including QA/QC samples). The AAS had completed 41 sampling periods as of December 31, 2010. A total of 323 AAS were collected (including field duplicates); LA fibers were detected in 15 AAS field samples and 3 AAS field duplicate samples.

The DEQ Troy Information Office was opened in April 2007 and continues to serve OU7 residents and community members by providing information on LA and TAPE, RDI, and AAS procedures. A full-time CIC is available to the public and is responsible for scheduling properties for TAPE inspections, answering property owner questions, providing informational pamphlets on LA, supporting the Tetra Tech field inspection staff, filing and maintaining all hard-copy field paperwork, maintaining all records in TOAD, and preparing scheduling packets for properties undergoing an initial TAPE inspection. Over the course of the project, the DEQ Project Officer, Tetra Tech Field Team Leader, and Tetra Tech management personnel have been alerted to various issues at properties because of the open line of communication between the CIC and OU7 residents.

Of the 33 parcels that underwent a TAPE inspection in 2010, Tetra Tech and the DEQ were able to identify 31 parcels that met at least one of the EPA removal action levels (Section 4.2.2). The DEQ used the EPA removal action levels in conjunction with OU7 secondary triggers, full parcel reviews, and RDI inspections to further evaluate the 33 parcels for possible removal action. A total of 12 parcels were added in 2010 to the original 102 parcels identified in 2009 for interior removal, exterior removal, demolition, or a combination of both interior and exterior removal action (Section 4.2.4). Removal



actions were performed by a USACE contractor after RDI activities had been completed at each participating parcel. In total, 84 removal actions were completed in 2010. Nine property owners deferred removal action to 2011, seventeen property owners declined removal, and Tetra Tech was unable to reach four property owners regarding removal action.

The TAPE investigations have generated an extensive amount of data on the location of visible vermiculite and vermiculite insulation within and around the buildings in OU7. In addition, information has been compiled on the history of the buildings and parcels, resident health and previous exposure to Libby vermiculite (to some degree), and how the parcels are utilized by the residents (i.e., use area information). It is presumed these data will be pertinent to any future site-wide risk assessments that will be conducted once the toxicity of LA is determined. These data will be sufficient for beginning the FS process.

## 5.2 RECOMMENDATIONS

Tetra Tech makes the following recommendations to the DEQ regarding investigations in OU7:

- Address any remaining uninspected parcels in OU7 by conducting TAPE inspections, using means such as voluntary recruitment.
- Complete removal actions on parcels identified for removal in 2009 and 2010 to minimize or eliminate resident exposure to LA;
- Continue to evaluate OU7 parcels for possible removal action as remaining TAPE investigations are performed;
- Complete the review of all AAS data for accuracy, completeness, and validity;
- Evaluate the need to continue the outdoor ambient air sampling program beyond the second year and continue the program if deemed appropriate;
- Conduct an LA background study of soils within the OU7 footprint for use in a human health risk assessment;
- Maintain community support and outreach in OU7;
- Once toxicity of LA has been calculated, perform a human health risk assessment using OU7 TAPE, background, and AAS data;
- Develop appropriate remedial action alternatives.

Additional data gaps and/or recommendations may depend on voluntary recruitment and activity-based sampling occurring in OU7 during 2011.

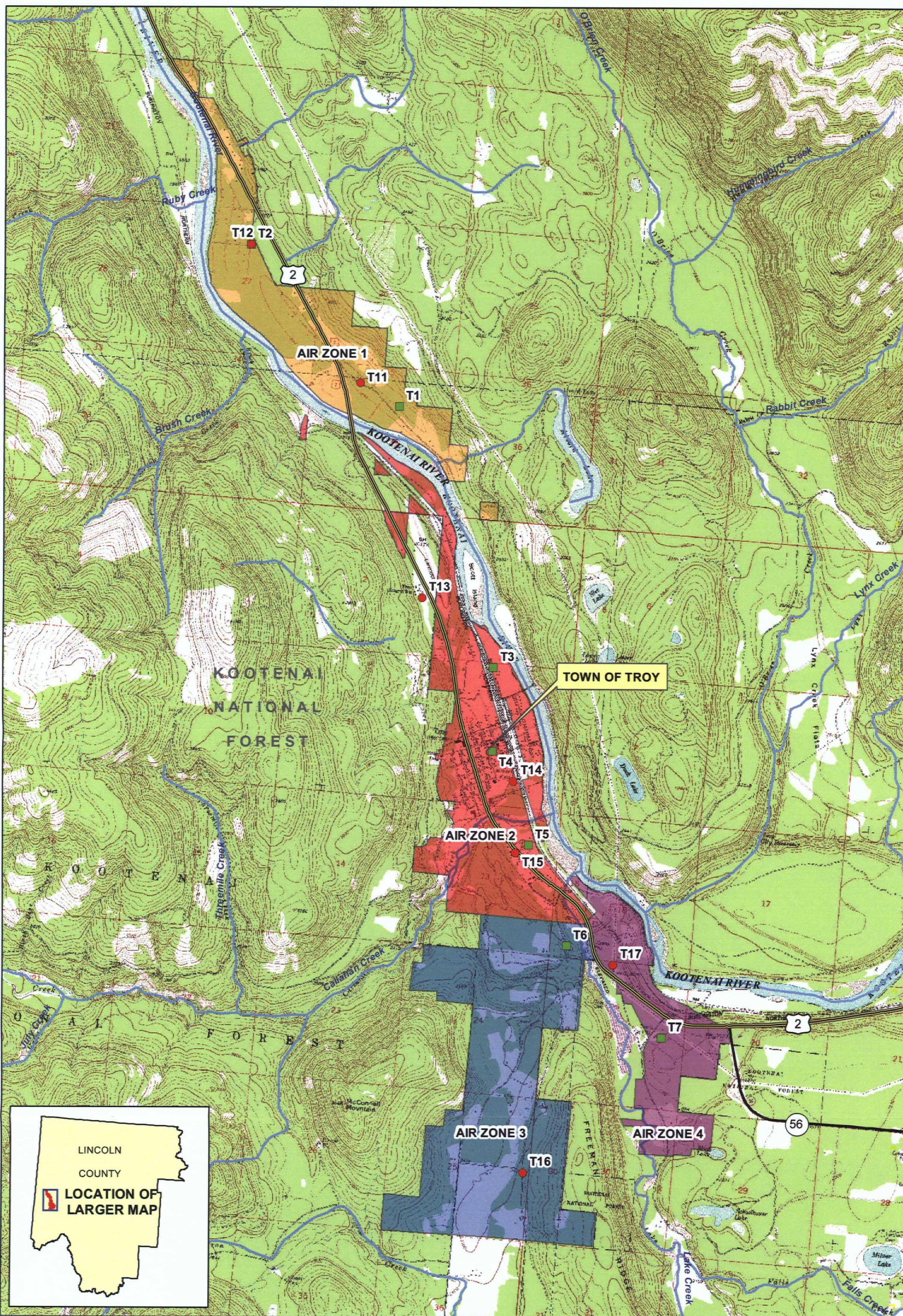
## 6.0 REFERENCES

- Camp, Dresser, and McKee (CDM). 2007a. Draft Quality Assurance Project Plan, Libby Asbestos Site, Libby, Montana. January.
- CDM. 2007b. Libby Asbestos Project Draft Pilot Study 30-point Dust Composite Sampling. Standard Operating Procedure. April.
- CDM. 2008a. Addendum to the Response Action Work Plan, Callahan Creek Removal Plan, Troy, Montana. July 25.
- CDM. 2008b. Technical Memorandum. Troy Visual Vermiculite Investigation, First Event. July 31. From Nicole Bein, CDM to Mark Raney, Volpe.
- CDM. 2009a. Final Remedial Investigation Report for Operable Unit 1 – Former Export Plant Site. August.
- CDM. 2009b. Technical Memorandum. Troy Visual Vermiculite Investigation, Second Event – Revision 1. April 16. From Nicole Bein, CDM to Mark Raney, Volpe.
- ISSI Consulting Group (ISSI). 2000. ISSI-LIBBY-01. Soil Sample Preparation. Revision 1 (original version). January 7. Revision 2 dated July 12, 2000. Revision 3 dated May 7, 2002. Revision 4 dated August 1, 2002. Revision 5 dated March 6, 2003. Revision 6 dated March 24, 2003. Revision 7 dated August 5, 2003. Revision 8 dated May 4, 2004. Revision 9 dated May 14, 2007. Revision 10 dated December 6, 2007.
- Montana Department of Environmental Quality (DEQ). 2009a. Final Libby Asbestos Site, Troy Operable Unit 07, Residential/Commercial Cleanup Criteria, Specific Use Area Visible Vermiculite Action Level Technical Memorandum. April 23.
- DEQ. 2009b. Libby Asbestos Site, Troy Operable Unit 07, Removal Parcel Status. November 30.
- DEQ. 2010. Personal communication. Communication between DEQ and Tetra Tech in form of electronic mail. Mail was sent from DEQ on September 2, 2010 to Tetra Tech with subject line *Handling of analytical data – both soil and air*. September.
- National Institute for Occupational Safety and Health (NIOSH). 1994. Manual of Analytical Methods for Asbestos (bulk) by PLM. 9002. Issue 2. August.
- Project Resources, Inc. 2011. Response Action Work Plan. Revision 3. Libby Asbestos Project. Libby, Montana. June.
- Syracuse Research Corporation (SRC). 2002. SRC-LIBBY-01. Qualitative Estimation of Asbestos in Coarse Soil by Visual Examination Using Stereomicroscopy and Polarized Light Microscopy. November 12. Revision 1, dated May 20, 2003. Revision 2, dated April 21, 2004.
- SRC 2003. SRC-LIBBY-03. Analysis of Asbestos Fibers in Soil by Polarized Light Microscopy. March 3. Revision 1, dated December 11, 2003. Revision 2 dated October 10, 2008.

- SRC. 2007. Request for Modification to Laboratory Activities (LB-000029B). April.
- SRC. 2008. Standard Operating Procedure for TEM Data Review and Data Entry Verification. March.
- TechLaw. 2007. Soil Preparation Work Plan. Libby Asbestos Site – Operable Unit 7. Revision D. March.
- Tetra Tech EM Inc. (Tetra Tech). 2007. Troy Asbestos Property Evaluation (TAPE) Work Plan (Field Sampling Plan and Quality Assurance Project Plan) for the Troy Asbestos Property Evaluation Project, Troy Operable Unit 7. July.
- Tetra Tech. 2009a. Final Data Management Plan (Version 3.0) for the Troy Asbestos Property Evaluation Project. August.
- Tetra Tech. 2009b. Remedial Investigation Work Plan, Outdoor Ambient Air Study (AAS), Operable Unit 7 of the Libby Asbestos Superfund Site. October.
- Tetra Tech. 2010a. Final First Quarter Memorandum, Outdoor Ambient Air Study, Operable Unit Number 7 of the Libby Asbestos Superfund Site. February.
- Tetra Tech. 2010b. Removal Design Investigation (RDI) Sampling and Analysis Plan (SAP) for Operable Unit 7 of the Libby Asbestos Superfund Site. April.
- Tetra Tech. 2010c. Final Quarter 2 and Quarter 3 Memorandum, Outdoor Ambient Air Study, Operable Unit Number 7 of the Libby Asbestos Superfund Site. September.
- Tetra Tech. 2010d. Final Quarter 4 Memorandum, Outdoor Ambient Air Study, Operable Unit Number 7 of the Libby Asbestos Superfund Site. December 15.
- Tetra Tech. 2010e. Draft Final Remedial Investigation Report, Operable Unit 7 of the Libby Asbestos Superfund Site. December.
- Tetra Tech. 2011. Final Quarter 5 Memorandum, Outdoor Ambient Air Study, Operable Unit Number 7 of the Libby Asbestos Superfund Site. February.
- U.S. Environmental Protection Agency (EPA). 1987. CFR 40. Appendix A to Subpart E of Part 763 – Interim Transmission Electron Microscopy Analytical Methods – Mandatory and Nonmandatory – and Mandatory Section to Determine Completion of Response Actions. October.
- EPA. 2003. Libby Asbestos Site Residential/Commercial Cleanup Action Level and Clearance Criteria, Technical Memorandum. Draft Final. December 15.
- EPA. 2010. EPA Data Management Plan, Libby Asbestos Site. Version 2010.1. Prepared by EPA Region 8 and EPA Emergency Response and Removal DATA Team. March.

**FIGURES**





**LEGEND**

- 2010 (Year 1) AMBIENT AIR SAMPLE STATION
- 2011 (Year 2) AMBIENT AIR SAMPLE STATION
- AMBIENT AIR ZONES**
  - ZONE 1
  - ZONE 2
  - ZONE 3
  - ZONE 4

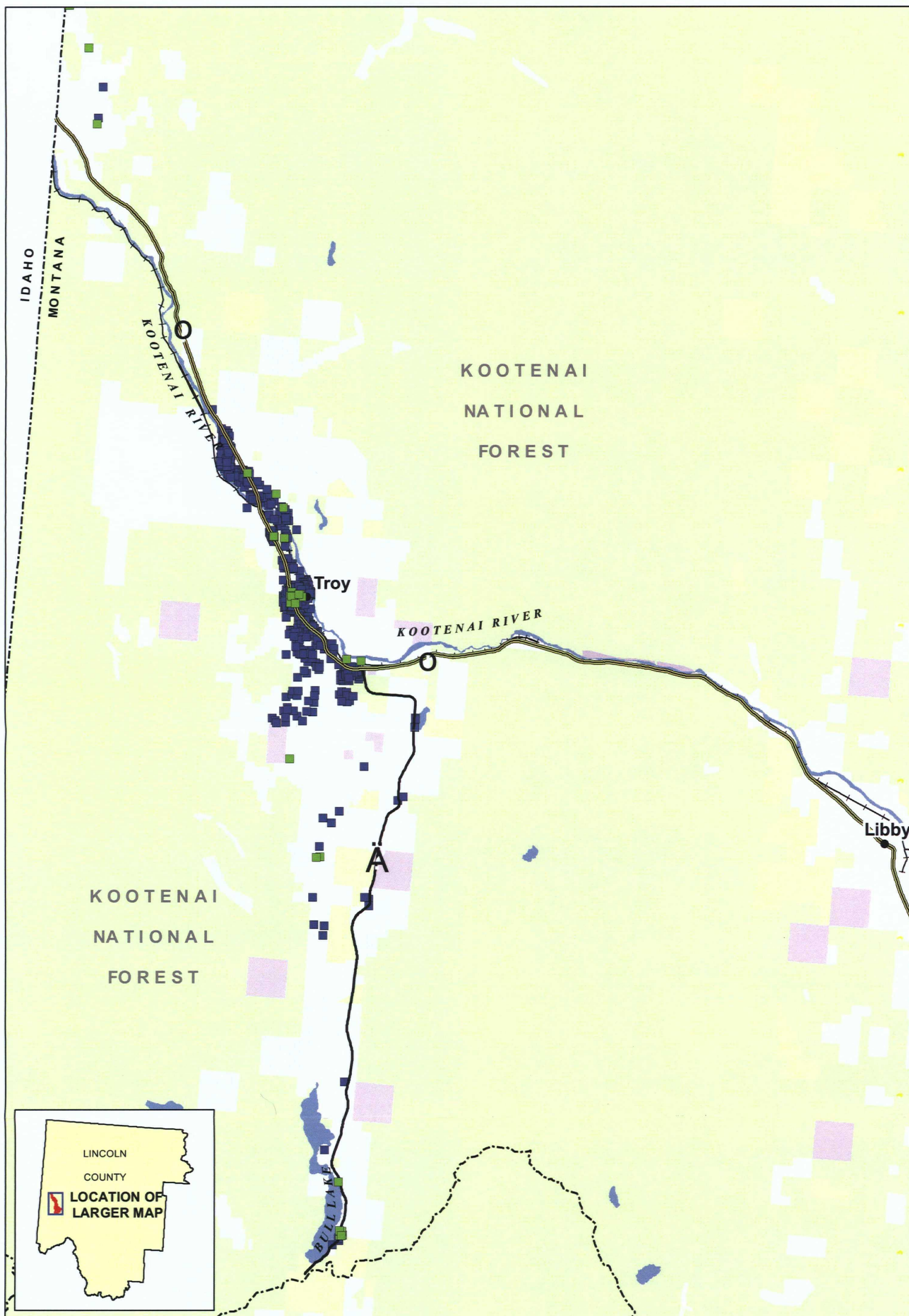
0 1 Miles



LIBBY ASBESTOS SUPERFUND SITE

**FIGURE 3-1**  
**OPERABLE UNIT 7**  
**OUTDOOR AMBIENT AIR STUDY**  
**YEAR 1 AND YEAR 2 STATION LOCATIONS**





IDAHO  
MONTANA

KOOTENAI  
NATIONAL  
FOREST

Troy

KOOTENAI RIVER

KOOTENAI  
NATIONAL  
FOREST

Libby



**Legend**

- INSPECTED IN 2010 (33 PARCELS)
- INSPECTED PRIOR TO 2010

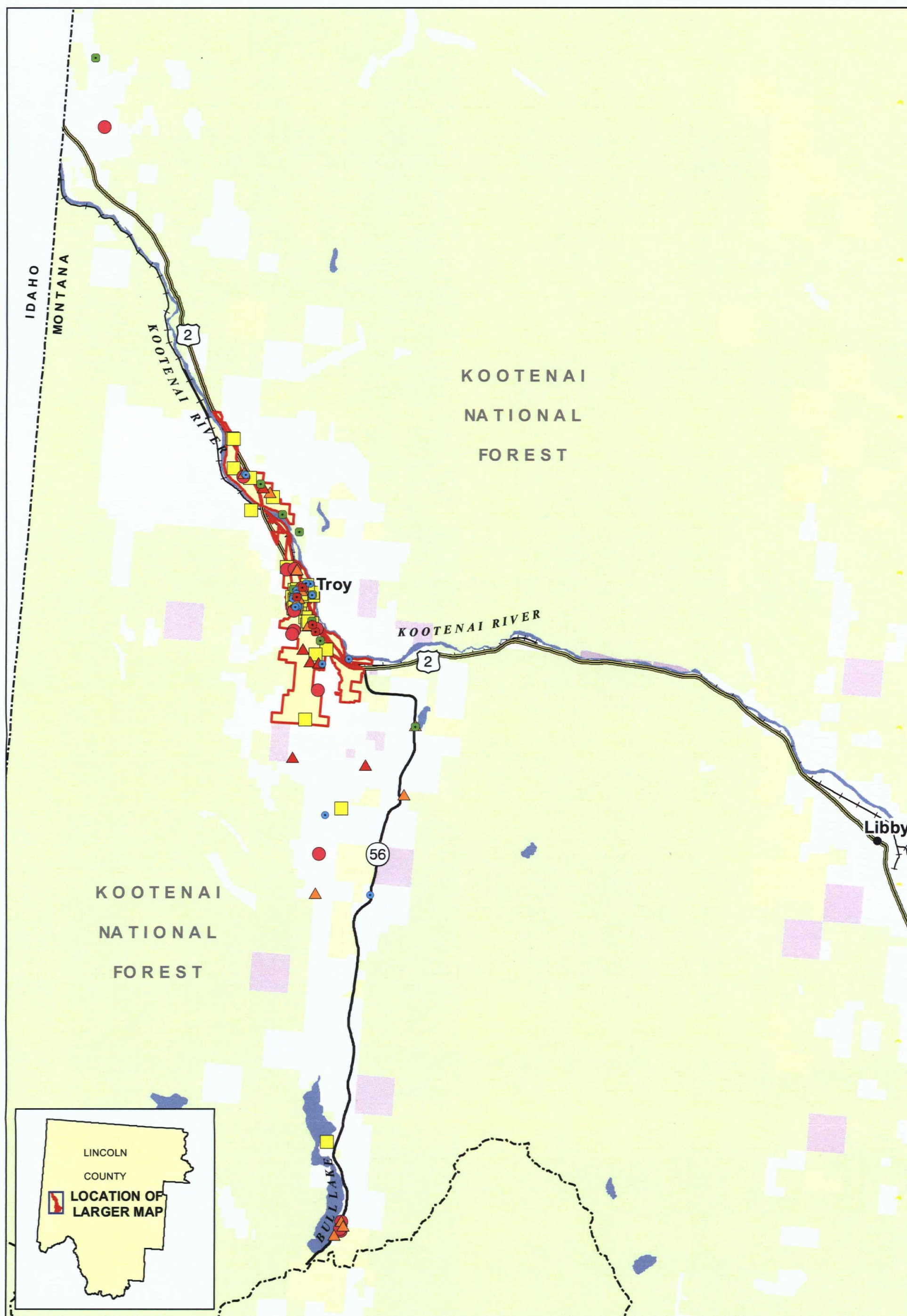


TIER 1 CONSULTING, INC.

LIBBY ASBESTOS SUPERFUND SITE

**FIGURE 4-1**  
TAPE INSPECTED PARCELS  
IN OPERABLE UNIT 7  
AND VICINITY





# Legend

- |                                     |                                      |
|-------------------------------------|--------------------------------------|
| ● NO CONTACT FOR REMOVAL ACTION (4) | ▲ COMBINATION REMOVAL COMPLETED (15) |
| ● DECLINED REMOVAL ACTION (17)      | ● EXTERIOR REMOVAL COMPLETED (14)    |
| ● DEFERRED REMOVAL ACTION (9)       | ■ INTERIOR REMOVAL COMPLETED (49)    |
| ▲ DEMOLITION COMPLETED (6)          | □ OU7 BOUNDARY                       |

0 2 Miles



LIBBY ASBESTOS SUPERFUND SITE

**FIGURE 4-2**  
REMOVAL ACTION PARCELS IN  
OPERABLE UNIT 7 AND VICINITY

**APPENDIX A**  
**TROY FIELD OFFICE (TFO) MODIFICATION RECORDS**





## Record of Modification

to the  
Troy Sampling and Quality Assurance Project Plan  
Field Activities  
TFO-00002

Instructions to Requester: Fax to contacts at bottom of form for review and approval.

File approved copy with Data Manager at the Troy Field Office (TFO).

Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.

If Modification is Temporary for a single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

- ☒ Outdoor Ambient Air Study Work Plan
- ☐ Other (Title and approval date): \_\_\_\_\_

Site-Specific Guidance/SOP:

Title NA

Number/Revision): NA

Requester: Catherine LeCours

Title: Project Manager

Company: DEQ

Date: March 4, 2010

Description of Modification (attach additional sheets if necessary, state section and page numbers of each document that are affected by the proposed modification): Section 4.4.4 in the *Final Remedial Investigation Work Plan Outdoor Ambient Air Study – Operable Unit Number 7 of the Libby Asbestos Superfund Site* references collecting approximately 3 liters per minute over the entire 5-day (120-hour) sampling event to achieve the target volume of 21,600 liters during the Troy ambient air study. A target volume of 21,600 liters will minimize the number of grid openings counted during laboratory analysis, reducing the time and cost of analysis while meeting the target analytical sensitivities.

However, sampling at high air volumes can create excessive filter loading which may lead to air pump faults, require additional analytical costs due to indirect sample analysis, or in some cases yield samples that can not be analyzed resulting in a loss of data. Therefore, the work plan reserved the option to "adjust this target volume based on changes in the target analytical sensitivities, sample results, or filter loading issues".

### OU7 Overloading Summary:

Tetra Tech requested that analytical results for the first sampling period be obtained as soon as possible to determine if the specified pump flow rate of 3.0 liters per minute was excessive and filter overloading would result. Three samples from Period 1 yielded overloaded cassettes while the remaining five cassettes were not overloaded. Overloaded cassette filters were noted to have a black "soot-like" substance on the filter. The three overloaded cassettes were collected at stations T-4, T-4QC and T-5 (the DEQ Office, DEQ Office QC station, and the County Shops station). Tetra Tech consulted with the DEQ and resolved that the sample stations with the overloaded filter cassettes were likely located in dusty areas and near high traveled roads. Tetra Tech recommended relocating the sampling boxes at these locations to positions farther away from the main roads. Tetra Tech also reduced the sample flow rates from 3.0 to 2.0 liters per minute. These changes were made prior to starting sample Period 4.

The three overloaded cassettes were analyzed using a secondary dilution process. Additional grid openings would need to be counted in order to achieve the analytical sensitivity and would result in increased analytical time and costs. The number of grid openings to be counted would increase from 45 to either 73 or 146 to reach required sensitivity levels.

The initial analytical results for Sample Period 1 were received on December 8, 2009, just prior to the start of Sample Period 5. The other Period 1 sample results did not require secondary dilution; therefore Period 5 flow rates were returned to 3.0 liters per minute.

The DEQ recommended that rush analysis be completed for the Period 5 samples to help evaluate if relocating the sample boxes at T-4, T-4QC, and T-5 helped avoid filter overloading at these locations. No overloaded cassette filters were identified for any of the Period 5 samples. As a result, the new locations of the boxes and the 3.0 liters per minute flow rate was established for subsequent sampling periods.

In order to evaluate ongoing sampling activities and to check for potential overloading, the DEQ recommended that additional samples be sent in for analysis prior to the ESAT laboratory becoming operational. Samples from Period 11 were forwarded to the EMSL Libby mobile lab for analysis. Several cassette filters from Period 11 were subsequently found to be overloaded.

As a result of the periodic overloading of sample filters, DEQ directed Tetra Tech reduce the sample flow rates from 3.0 to 2.0 liters per minute for the remainder of the OU7 ambient air monitoring project. This modification was made as a permanent procedural change beginning in Sample Period 13.

Field Sampling Data Sheet where Modification is documented (attach associated correspondence): N/A

Potential Implications of Modification: Modifications to sampling protocol involve reprogramming sampling pumps to a flow rate of 2.0 liters per minute. Analytical protocol will be impacted as additional grids will be counted to meet analytical sensitivity requirements for the reduced air flow.

Duration of Modification (Check one):

☐ Temporary

Date(s): \_\_\_\_\_

Station Number- \_\_\_\_\_

TA- \_\_\_\_\_

☒ Permanent (Proposed Text Modification Section) Effective Date: March 4, 2010

Proposed Text Modifications in Associated Document (attach additional sheets if necessary): Section 4.4.4 in the Final Remedial Investigation Work Plan Outdoor Ambient Air Study – Operable Unit Number 7 of the Libby Asbestos Superfund Site:

#### 4.4.4 Collection Interval and Flow Rates

To ensure that target analytical sensitivities can be achieved, the target volume of air to be collected for each sample will be 21,600 14,400 liters. Tetra Tech may adjust this target volume based on changes in the target analytical sensitivities.

sample results, or filter loading issues. A target volume of ~~21,600~~ 14,400 liters will ~~minimize~~ optimize the number of grid openings counted during laboratory analysis, reducing the time and cost of analysis while meeting the target analytical sensitivities

The number of grid openings to be counted for this volume of air will be 45 67 and was calculated using the equation provided in Section 6.1 of SOP No EPA-LIBBY-09 (rev 1). This equation and the spreadsheet used to calculate grid openings are shown in Appendix F.

To help ensure that samples capture long-term averages, each sample will be collected over a 5-day (120-hour) interval. Thus, the target flow rate is approximately 3- 2.0 liters per minute over the entire sampling event to achieve the target volume of ~~21,600~~ 14,400 liters.

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable

Reject

Low Bias

Estimate

High Bias

**No Bias**

Technical Review and Approval: \_\_\_\_\_  
(DEQ Project Manager or designate)

*Catherine LeCours*

Date: March 15, 2010

EPA Review and Approval: \_\_\_\_\_  
(USEPA RPM or designate)

N/A

Date: \_\_\_\_\_

#### DATA QUALITY INDICATOR DEFINITIONS

**Reject** - Samples associated with this modification form are not useable. The conditions outlined in the modification form adversely effect the associated sample to such a degree that the data are not reliable.

**Low Bias** - Samples associated with this modification form are useable, but results are likely to be biased low. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated low.

**Estimate** - Samples associated with this modification form are useable, but results should be considered approximations. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimates.

**High Bias** - Samples associated with this modification form are useable, but results are likely to be biased high. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated high.

**No Bias** - Samples associated with this modification form are useable as reported. The conditions outlined in the modification form suggest that associated sample data are reliable as reported.

# Basic Equations:

$$C = N * EFA / (GO * Ago * V * 1000)$$

$$S = EFA / (GO * Ago * V * 1000)$$

$$C = N * S$$

$$V = Flow * Time$$

EFA = effective filter area

GO = number of grid openings counted

Ago = area of one grid opening

V = volume of air passed through filter

S = analytical sensitivity = 1/volume analyzed

## GOs needed to hit target S

$$GO = EFA / (S * Ago * V * 1000)$$

Note: to make GO small, must make V big

|     |         |      |
|-----|---------|------|
| S   | 0.00004 | cc-1 |
| EFA | 385     | mm2  |
| Ago | 0.01    | mm2  |
| V   | 21600   | L    |

GO 45

### Volume Calc

|      |         |
|------|---------|
| Flow | 3 L/min |
| Time | 5 days  |
| V    | 21600 L |

## GOs needed to hit target S

$$GO = EFA / (S * Ago * V * 1000)$$

Note: to make GO small, must make V big

|     |         |      |
|-----|---------|------|
| S   | 0.00004 | cc-1 |
| EFA | 385     | mm2  |
| Ago | 0.01    | mm2  |
| V   | 14400   | L    |

GO 67

### Volume Calc

|      |         |
|------|---------|
| Flow | 2 L/min |
| Time | 5 days  |
| V    | 14400 L |



## Record of Modification

to the  
Troy Sampling and Quality Assurance Project Plan  
Field Activities  
TFO-00003

Instructions to Requester: Fax to contacts at bottom of form for review and approval.

File approved copy with Data Manager at the Troy Field Office (TFO).

Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.

If Modification is Temporary for a single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

☒ Outdoor Ambient Air Study Work Plan

☐ Other (Title and approval date): \_\_\_\_\_

Site-Specific Guidance/SOP:

Title NA

Number/Revision): NA

Requester: Catherine LeCours

Title: Project Manager

Company: DEQ

Date: October 14, 2010

Description of Modification (attach additional sheets if necessary, state section and page numbers of each document that are affected by the proposed modification): Section 4.4.2 in the Final Remedial Investigation Work Plan Outdoor Ambient Air Study – Operable Unit Number 7 of the Libby Asbestos Superfund Site provides a general description of proposed ambient air sampling station locations. The ambient air monitoring stations will be relocated for the second (and any subsequent) years for more comprehensive coverage of the four "air zones" identified in OU7. This will provide additional data in support of human health risks related to ambient air exposure. The text will provide flexibility for future changes to the sample station locations.

Field Sampling Data Sheet where Modification is documented (attach associated correspondence): N/A

Potential Implications of Modification: Re-locating the ambient air sampling stations within the four "air zones" will further support human health risk assessment for OU7. Moving the stations will not impact analytical protocol but may have an impact on LA concentrations due to the new station locations; however, it is not anticipated to have any impact on the quality and usefulness of analytical results.

Duration of Modification (Check one):

☐ Temporary

Date(s): \_\_\_\_\_ Station Number- \_\_\_\_\_

TA- \_\_\_\_\_

☒ Permanent (Proposed Text Modification Section) Effective Date: November 1, 2010

Proposed Text Modifications in Associated Document (attach additional sheets if necessary): Section 4.4.2 in the Final Remedial Investigation Work Plan Outdoor Ambient Air Study – Operable Unit Number 7 of the Libby Asbestos Superfund Site and Table 4-2 will read as follows:

As previously discussed, the predominant winds in Troy flow in southeast and northwest directions, following the river corridor in which Troy is located. As wind direction can change throughout the year, sampling stations will be placed in close proximity to the northern and southern boundaries of OU7. This will ensure that there are upwind and downwind sample collection stations for both directions the wind is blowing. Additional stations will be located near the northern and southern borders of downtown Troy in order to have upwind and downwind sample stations in the area with the highest population density. One sample station will also be located in the densely populated area of downtown Troy and a final station will be located north of Troy in a developed area. Table 4-2 has the rationale for the ambient air monitoring locations and Figure 4-2 shows the proposed ambient air monitoring locations.

**TABLE 4-2**  
**OUTDOOR AMBIENT AIR SAMPLING LOCATIONS**

| <u>Station Location*</u>  | <u>Purpose</u>  |
|---|---|
| <u>Upwind/downwind site near the NW border of OU7</u>                                       | <u>This site will be used to evaluate LA concentrations at the northernmost boundary of OU7 and confirm if any LA is entering or leaving OU7</u>    |
| <u>Community exposure site located within small community area NE of the Kootenai River</u> | <u>This site will be used to evaluate LA concentrations at the small community and the northern boundary of OU7</u>                                 |
| <u>City of Troy northern site</u>   | <u>This site will be used to evaluate LA concentrations north of the Troy community</u>   |
| <u>City of Troy population exposure site</u>  | <u>This site will be used to evaluate LA concentrations in the Troy community (specifically in the population center).</u>                          |
| <u>City of Troy southern site</u>   | <u>This site will be used to evaluate LA concentrations south of the Troy community</u>   |
| <u>SW upwind/downwind site</u>  | <u>This site will be used to evaluate LA concentrations at the southwestern boundary of the OU and confirm if any LA is entering or leaving OU7</u> |
| <u>SE upwind/downwind site</u>  | <u>This site will be used to evaluate LA concentrations at the southeastern boundary of the OU and confirm if any LA is entering or leaving OU7</u> |
| <u>Rotating co-located sampling station to each of the seven sampling locations</u>         | <u>Co-located sampling station to evaluate analytical variability at each of the seven station locations</u>  |

Notes:

|    |                 |    |               |
|----|-----------------|----|---------------|
| LA | Libby Amphibole | SE | Southeast     |
| NE | Northeast       | SW | Southwest     |
| NW | Northwest       | OU | Operable Unit |

\* Predominant winds in the area blow from the southeast and northwest. Stations on the southeast and northwest boundaries of OU7 will act as upwind and downwind receptors depending on wind direction. A summary of historical meteorological conditions is presented in Section 4.4.1.

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable

Reject

Low Bias

Estimate

High Bias

☒ No Bias

Technical Review and Approval:  
(DEQ Project Manager or designate)

*Catherine LeCours*

Date: 10-18-2010

EPA Review and Approval:  
(USEPA RPM or designate)

*LAT*

Date: 10-18-2010

#### DATA QUALITY INDICATOR DEFINITIONS

**Reject** – Samples associated with this modification form are not useable. The conditions outlined in the modification form adversely affect the associated sample to such a degree that the data are not reliable.

**Low Bias** – Samples associated with this modification form are useable, but results are likely to be biased low. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated low.

**Estimate** – Samples associated with this modification form are useable, but results should be considered approximations. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimates.

**High Bias** – Samples associated with this modification form are useable, but results are likely to be biased high. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated high.

**No Bias** – Samples associated with this modification form are useable as reported. The conditions outlined in the modification form suggest that associated sample data are reliable as reported.



## Record of Modification

to the  
Troy Sampling and Quality Assurance Project Plan  
Field Activities  
TFO-00004

**Instructions to Requester:** Fax to contacts at bottom of form for review and approval.

File approved copy with Data Manager at the Troy Field Office (TFO).

Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.

If Modification is Temporary for a single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

☒ Outdoor Ambient Air Study Work Plan

☐ Other (Title and approval date): \_\_\_\_\_

Site-Specific Guidance/SOP:

Title NA

Number/Revision): NA

Requester Catherine LeCours

Title: Project Manager

Company: DEQ

Date: October 14, 2010

Description of Modification (attach additional sheets if necessary, state section and page numbers of each document that are affected by the proposed modification): Section 5.2 in the Final Remedial Investigation Work Plan Outdoor Ambient Air Study – Operable Unit Number 7 of the Libby Asbestos Superfund Site states "Field co-located samples will be collected from the same location throughout the project and will consist of a co-located sampling station (Station T4QC) to be built approximately seven feet from the proposed sampling station to be located at the DEQ Troy Information Center." For additional years of ambient air sampling this protocol will be changed so that the co-located sampling station will be named "TQC" and will move to a different sampling station during each sampling period.

Field Sampling Data Sheet where Modification is documented (attach associated correspondence): N/A

Potential implications of Modification: Modifications to sampling protocol involve rotating the co-located sampling station among all of the seven ambient air sampling stations. Analytical protocol will not be impacted; however, moving the co-located sampling station will allow evaluation of analytical variability at all seven stations. A minimum of five co-located samples will be collected at each of the stations.

Duration of Modification (Check one):

☐ Temporary

Date(s): \_\_\_\_\_ Station Number- \_\_\_\_\_

TA- \_\_\_\_\_

☒ Permanent (Proposed Text Modification Section) Effective Date: November 1, 2010

Proposed Text Modifications in Associated Document (attach additional sheets if necessary): Section 4.4.2 in the Final Remedial Investigation Work Plan Outdoor Ambient Air Study – Operable Unit Number 7 of the Libby Asbestos Superfund Site (Table 4-2) and Section 5.2 (Paragraph 5) will read as follows: Co-located field samples will be collected



by Station TQC at a different station location each sample period throughout the project. Station TQC will be placed next to each of the seven stations throughout monitoring. Station TQC will be moved after each sampling period and will be cycled through each of the stations (e.g. T11, T12, T13, T14... T17) so that a minimum of 5 co-located samples are collected from each of the seven sampling stations over 36 sampling periods.

**TABLE 4-2**  
**OUTDOOR AMBIENT AIR SAMPLING LOCATIONS**

| <u>Station Location*</u>  | <u>Purpose</u>  |
|---|---|
| <u>Upwind/downwind site near the NW border of OU7</u>                                       | <u>This site will be used to evaluate LA concentrations at the northernmost boundary of OU7 and confirm if any LA is entering or leaving OU7</u>    |
| <u>Community exposure site located within small community area NE of the Kootenai River</u> | <u>This site will be used to evaluate LA concentrations at the small community and the northern boundary of OU7</u>                                 |
| <u>City of Troy northern site</u>   | <u>This site will be used to evaluate LA concentrations north of the Troy community</u>   |
| <u>City of Troy population exposure site</u>  | <u>This site will be used to evaluate LA concentrations in the Troy community (specifically in the population center).</u>                          |
| <u>City of Troy southern site</u>   | <u>This site will be used to evaluate LA concentrations south of the Troy community</u>   |
| <u>SW upwind/downwind site</u>  | <u>This site will be used to evaluate LA concentrations at the southwestern boundary of the OU and confirm if any LA is entering or leaving OU7</u> |
| <u>SE upwind/downwind site</u>  | <u>This site will be used to evaluate LA concentrations at the southeastern boundary of the OU and confirm if any LA is entering or leaving OU7</u> |
| <u>Rotating co-located sampling station to each of the seven sampling locations</u>         | <u>Co-located sampling station to evaluate analytical variability at each of the seven station locations</u>  |

Notes:

|    |                 |    |               |
|----|-----------------|----|---------------|
| LA | Libby Amphibole | SE | Southeast     |
| NE | Northeast       | SW | Southwest     |
| NW | Northwest       | OU | Operable Unit |

\* Predominant winds in the area blow from the southeast and northwest. Stations on the southeast and northwest borders of OU7 will act as upwind and downwind receptors depending on wind direction. A summary of historical meteorological conditions is presented in Section 4.4.1.

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable

Reject

Low Bias

Estimate

High Bias

☒ No Bias

Technical Review and Approval: Catherine LeCours  
(DEQ Project Manager or designate)

Date: 10-18-2010

EPA Review and Approval: HA [Signature]  
(USEPA RPM or designate)

Date: 10-18-2010

#### DATA QUALITY INDICATOR DEFINITIONS

**Reject** – Samples associated with this modification form are not useable. The conditions outlined in the modification form adversely affect the associated sample to such a degree that the data are not reliable.

**Low Bias** – Samples associated with this modification form are useable, but results are likely to be biased low. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated low.

**Estimate** – Samples associated with this modification form are useable, but results should be considered approximations. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimates.

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**No Bias** – Samples associated with this modification form are useable as reported. The conditions outlined in the modification form suggest that associated sample data are reliable as reported.



## Record of Modification

to the  
Troy Sampling and Quality Assurance Project Plan  
Field Activities

TFO- 0 0 0 0 1 (numbered by Data Manager)

Instructions to Requester: Fax to contacts at bottom of form for review and approval.

File approved copy with Data Manager at the Troy Field Office (TFO).

Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.

If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

- ☒ Troy Removal Design Investigation WP/SAP

☐ Other (Title and approval date): \_\_\_\_\_

Site-Specific Guidance/SOP (Number and Revision No.) (check one):

- ☐ Tetra Tech Aggressive Attic Inspection SOP
- ☐ CDM-LIBBY-05, Current Revision (30-point soil sample collection)
- ☐ CDM-LIBBY-06, Current Revision (Visible Vermiculite Estimation)

Other (Title, Number/Revision): \_\_\_\_\_

Requester: Catherine LeCours

Title: DEQ Project Manager

Company: Montana DEQ

Date: July 21, 2010

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): Revise Page 23, Section 4.4.5, Sample Labeling and Identification to read as follows: "The sample labeling scheme is as follows: TD-XXXXX Where: TD identifies that a sample is collected in accordance with this RDI SAP and XXXXX represents a 5-digit numeric code."

Field logbook and page number / FSDS where Modification is documented (or attach associated correspondence):  
n/a

Potential Implications of Modification: A five digit sample identification number will be consistent with the remainder of the Libby Asbestos database.

Duration of Modification (check one):

- ☐ Temporary

Date(s): \_\_\_\_\_

AD- \_\_\_\_\_

BD(s)- \_\_\_\_\_

TT(s)- \_\_\_\_\_

- ☒ Permanent (Proposed Text Modification Section) Effective Date: July 21, 2010

Proposed Text Modifications in Associated Document (attach additional sheets if necessary): see above

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable

Reject

Low Bias

Estimate

High Bias

No Bias

Technical Review and Approval: Catherine LeCours  
(DEQ Project Manager or designate)

Date: \_\_\_\_\_

EPA Review and Approval: n/a  
(USEPA RPM or designate)

Date: \_\_\_\_\_

## DATA QUALITY INDICATOR DEFINITIONS

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**Low Bias** - Samples associated with this modification form are useable, but results are likely to be biased low. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated low.

**Estimate** - Samples associated with this modification form are useable, but results should be considered approximations. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimates.

**High Bias** - Samples associated with this modification form are useable, but results are likely to be biased high. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated high.

**No Bias** - Samples associated with this modification form are useable as reported. The conditions outlined in the modification form suggest that associated sample data are reliable as reported.

## Record of Modification



to the  
Troy Sampling and Quality Assurance Project Plan  
Field Activities

TFO - 00002

**Instructions to Requester:** Fax to contacts at bottom of form for review and approval.

File approved copy with Data Manager at the Troy Field Office (TFO).

Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.

If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

- ☐ Troy Removal Design Investigation WP/SAP

☐ Other (Title and approval date): \_\_\_\_\_

Site-Specific Guidance/SOP (Number and Revision No.) (check one):

☐ Tetra Tech Aggressive Attic Inspection SOP

☐ CDM-LIBBY-05, Current Revision (30-point soil sample collection)

☐ CDM-LIBBY-06, Current Revision (Visible Vermiculite Estimation)

Other (Title, Number/Revision): \_\_\_\_\_

Requester: Catherine LeCours

Title: Project Manager

Company: DEQ/Tetra Tech

Date: August 5, 2010

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): This modification requires changes to the Removal Design Investigation (RDI) inspection procedures for the Bruce Cole property, AD-202036. This property is an approximately 37 acre parcel adjacent the Kootenai River located southeast of Troy. Tetra Tech completed an RDI inspection at the property on August 5, 2010 due to known contamination in a small barn, which is the only building located on the property. The remaining areas on the property consist almost entirely of a hay field with a small dirt road leading to the barn. Tetra Tech conducted an Environmental Resource Specialist (ERS) cleaning effort in the barn on September 3, 2009 at which time 7 bags of Zonolite were removed from the interior; however, due to the amount of contamination on the floor of the building, Tetra Tech was unable to detail clean the barn under standard ERS cleaning procedures. Because of the size of the property and the fact that the only known vermiculite is within the interior of the barn, Tetra Tech requests a modification from the standard RDI procedures by limiting the RDI to a reasonable area surrounding the barn. DEQ agrees that this modification would be prudent. In addition, during the TAPE investigation, the owner requested that Tetra Tech not sample within the hay field on the property fearing that his crop would be trampled, so a full TAPE inspection protocol could not be completed. Instead, Tetra Tech completed a limited inspection in the area around the barn. If analytical results indicate detectable Libby Amphibole (LA), a re-examination of the property may be required and areas of interest may need to be expanded.

Field logbook and page number / FSDS where Modification is documented (or attach associated correspondence): TR-0041, pages 61 through 63.

Potential Implications of Modification: The TAPE field inspection encompassed an area of 130 feet both east and west of the barn and approximately 40 feet south of the barn into the hay field. There is a slight potential that vermiculite may be unidentified in the limited use area (LUA) hayfield or the LUA overgrown areas adjacent to the Kootenai River. This potential may also exist on the specific use area (SUA) dirt road outside the inspection boundary. The property owner mows the hay field twice per year and plows the field once every 7 years.

Duration of Modification (check one):

- ☒ Temporary

Date(s): August 4, 2010

AD-202036

BD(s)- BD-202883

TT(s)- TD-22027, TD-22028, TD-22029 AND TD-22030

- ☐ Permanent (Proposed Text Modification Section) Effective Date: NA

Proposed Text Modifications in Associated Document (attach additional sheets if necessary): NA

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable

Reject

Low Bias

Estimate

High Bias

No Bias

Technical Review and Approval: [Signature]  
(DEQ Project Manager or designate)

Date: August 11, 2010

EPA Review and Approval: \_\_\_\_\_  
(USEPA RPM or designate)

Date: \_\_\_\_\_

Revised March 25, 2010

#### DATA QUALITY INDICATOR DEFINITIONS

**Reject** - Samples associated with this modification form are not useable. The conditions outlined in the modification form adversely affect the associated sample to such a degree that the data are not reliable.

**Low Bias** - Samples associated with this modification form are useable, but results are likely to be biased low. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated low.

**Estimate** - Samples associated with this modification form are useable, but results should be considered approximations. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimates.

**High Bias** - Samples associated with this modification form are useable, but results are likely to be biased high. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated high.

**No Bias** - Samples associated with this modification form are useable as reported. The conditions outlined in the modification form suggest that associated sample data are reliable as reported.



## Record of Modification

to the  
Troy Sampling and Quality Assurance Project Plan  
Field Activities  
TFO-00015

**Instructions to Requester:** Fax to contacts at bottom of form for review and approval.

File approved copy with Data Manager at the Troy Field Office (TFO).

Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.

If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

☒ Troy Asbestos Property Evaluation Work Plan

☐ Other (Title and approval date): \_\_\_\_\_

Site-Specific Guidance/SOP (Number and Revision No.) (check one):

☐ CDM-LIBBY-10, Current Revision (30-point dust sample collection)

☐ CDM-LIBBY-05, Current Revision (30-point soil sample collection)

☐ CDM-LIBBY-06, Current Revision (Visible Vermiculite Estimation)

Other (Title, Number/Revision): \_\_\_\_\_

Requester: Catherine LeCours

Title: Project Manager

Company: DEO

Date: May 4, 2010

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): This modification calls for the elimination of rinsate (equipment) blanks as field QC samples. Equipment blanks will no longer be collected as they are currently not required by EPA for soil sampling within OU7 because: (1) detection levels for LA using current polarized light microscopy (PLM) analytical methods are not low enough to capture concentrations that would be expected in equipment blanks; and (2) the frequency of detection for LA in historically-collected project equipment blanks is extremely low.

Field logbook and page number where Modification is documented (or attach associated correspondence):  
NA

Potential Implications of Modification: Although equipment decontamination procedures will remain unchanged, there is a slight potential that incomplete decontamination issues will not be caught due to the elimination of equipment blanks. As the PLM analytical detection limits are not low enough to identify the levels that would remain as a result of incomplete decontamination, the contaminants that would potentially be passed along to the next soil sample would not be identified.

Duration of Modification (check one):

☐ Temporary

Date(s): \_\_\_\_\_

AD- \_\_\_\_\_

BD(s)- \_\_\_\_\_

TT(s)- \_\_\_\_\_

☒ Permanent (Proposed Text Modification Section) Effective Date: May 4, 2010



Proposed Text Modifications in Associated Document (attach additional sheets if necessary): ~~The following text from Section 5.2 (Quality Control Samples) shall be removed. Equipment Rinsate Blanks—Soil sampling equipment rinsate blanks will be collected at a rate of one per calendar week (Monday through Sunday) of sampling per field team. Equipment rinsate blanks will be collected by pouring distilled water over the sampling equipment into a decontaminated stainless steel sampling bowl, pouring the rinse water from the bowl into a sample bottle, placing the sample bottle in a re-closable plastic bag, and submitting it for analysis by method EPA 100.2, modification 20. Data from equipment blank samples will be used to evaluate whether the decontamination procedures result in sampling equipment that is asbestos-free. Equipment rinsate blank samples with elevated results may indicate inadequate equipment decontamination procedures. Those results will be communicated to the field immediately upon receipt such that corrective action can be implemented.~~

The following text shall replace the deleted text from Section 5.2 (Quality Control Samples) Equipment Rinsate Blanks: Equipment blanks are currently not required by EPA for soil sampling at OU7 because: (1) detection levels for LA using current polarized light microscopy (PLM) analytical methods are not low enough to capture concentrations that would be expected in equipment blanks; and (2) the frequency of detection for LA in historically-collected project equipment blanks is extremely low.

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable

Reject

**Low Bias**

Estimate

High Bias

No Bias

Technical Review and Approval: Catherine LeCours  
(DEQ Project Manager or designate)

Date: May 2, 2010

EPA Review and Approval: NA  
(USEPA RPM or designate)

Date: NA

## DATA QUALITY INDICATOR DEFINITIONS

**Reject** - Samples associated with this modification form are not useable. The conditions outlined in the modification form adversely effect the associated sample to such a degree that the data are not reliable.

**Low Bias** - Samples associated with this modification form are useable, but results are likely to be biased low. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated low.

**Estimate** - Samples associated with this modification form are useable, but results should be considered approximations. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimates.

**High Bias** - Samples associated with this modification form are useable, but results are likely to be biased high. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated high.

**No Bias** - Samples associated with this modification form are useable as reported. The conditions outlined in the modification form suggest that associated sample data are reliable as reported.



## Record of Modification

to the  
Troy Sampling and Quality Assurance Project Plan  
Field Activities  
TFO-00016

Instructions to Requester: Fax to contacts at bottom of form for review and approval.

File approved copy with Data Manager at the Troy Field Office (TFO).

Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.

If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

☒ Troy Asbestos Property Evaluation Work Plan

☐ Other (Title and approval date): \_\_\_\_\_

Site-Specific Guidance/SOP (Number and Revision No.) (check one):

☐ CDM-LIBBY-10, Current Revision (30-point dust sample collection)

☐ CDM-LIBBY-05, Current Revision (30-point soil sample collection)

☐ CDM-LIBBY-06, Current Revision (Visible Vermiculite Estimation)

Other (Title, Number/Revision): \_\_\_\_\_

Requester: Catherine LeCours

Title: Project Manager

Company: DEQ

Date: May 4, 2010

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): This modification adjusts the schedule of visual observations and soil sampling frequency for TAPE inspections. Changes implemented by this modification come from the recently approved OU4 General Property Investigation WP developed by Camp Dresser McKee (CDM) and approved as final in April 2010. This TFO is designed to provide consistency and efficiency between OU4 and OU7 sampling efforts in screening properties for potential future removal actions.

Field logbook and page number where Modification is documented (or attach associated correspondence):  
NA

Potential Implications of Modification: This modification provides consistency to OU4 and OU7 characterization efforts and efficiency for potential future removal actions. No negative impacts to data quality or completeness of characterizations are anticipated.

Duration of Modification (check one):

☐ Temporary

Date(s): \_\_\_\_\_

AD- \_\_\_\_\_

BD(s)- \_\_\_\_\_

TT(s)- \_\_\_\_\_

☒ Permanent (Proposed Text Modification Section) Effective Date: May 4, 2010

Proposed Text Modifications in Associated Document (attach additional sheets if necessary): The following table and text from the General Property Investigation WP (CDM 2010) replaces all references to associated visual observation and soil sampling protocols as set forth in Section 4 of the 2007 TAPE WP. New protocols are as follows:

#### Visual Inspection

Visual inspection of exterior soils will be completed in accordance with CDM-LIBBY-06. The number of point inspections to be completed per use area is defined in Table 4-2.

**TABLE 4-2**  
**TAPE VISUAL INSPECTION AND SOIL SAMPLING PROTOCOL**

| <u>Area Type<sup>1</sup></u>             | <u>Visual Inspection Protocol<sup>2</sup></u> | <u>Soil Sampling Protocol<sup>3</sup></u>            |
|--|---|--|
| SUA (Flowerbed, Garden, Play Area, etc.) | <u>1 PI/100 ft<sup>2</sup></u>                | <u>1 sample per use area type</u>                    |
| <u>Driveway (SUA)</u>                    | <u>1 PI/200 ft<sup>2</sup></u>                | <u>1 sample per use area</u>                         |
| CUA (Yard, etc.)                         | <u>1 PI/1,450 ft<sup>2</sup></u>              | <u>1 sample per acre (43,560 ft<sup>2</sup>)</u>     |
| LUA (Field, Pasture, etc.)               | <u>1 PI/7,260 ft<sup>2</sup></u>              | <u>1 sample per 5 acres (217,800 ft<sup>2</sup>)</u> |
| ISA (Shed, Carport, Garage, etc.)        | <u>1 PI/100 ft<sup>2</sup></u>                | <u>1 sample per use area</u>                         |
| <u>Crawlspce (ISA)</u>                   | <u>1 PI/100 ft<sup>2</sup></u>                | <u>1 sample per use area</u>                         |
| NUA (Wooded Area, etc.)                  | <u>No Inspection</u>                          | <u>No Sampling</u>                                   |

**Notes:**

<sup>1</sup>Multitple SUAs of the same type within the same general area may be combined to form one sample area. Examples include gardens along the drip line of the house, or multiple raised flower beds within a CUA.

<sup>2</sup>A minimum of 5 points will be inspected per use area regardless of size.

<sup>3</sup>All soil samples are 30-point composites. Areas where vermiculite is observed will also be sampled.

SUA - Specific Use Area

CUA - Common Use Area

LUA - Limited Use Area

NUA - Non Use Area

ISA - Interior Surface Area

PI - Point Inspection

ft<sup>2</sup> - square feet

### Soil Sample Collection

The frequency of TAPE soil samples will be collected in accordance with Table 4-2, that defines the maximum area per soil sample. The soil samples will be collected following the procedures described in the TAPE Work Plan (Tetra Tech 2007). Thirty soil aliquots will be placed into a stainless steel bowl, homogenized, and placed in a re-closable plastic bag.

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable

Reject

Low Bias

Estimate

High Bias

**No Bias**

Technical Review and Approval: \_\_\_\_\_  
(DEQ Project Manager or designate)

*Catherine LeCours*

Date: May 4, 2010

EPA Review and Approval: \_\_\_\_\_  
(USEPA RPM or designate)

NA

Date: NA

### DATA QUALITY INDICATOR DEFINITIONS

**Reject** - Samples associated with this modification form are not useable. The conditions outlined in the modification form adversely affect the associated sample to such a degree that the data are not reliable.

**Low Bias** - Samples associated with this modification form are useable, but results are likely to be biased low. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated low.

**Estimate** - Samples associated with this modification form are useable, but results should be considered approximations. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimates.

**High Bias** - Samples associated with this modification form are useable, but results are likely to be biased high. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated high.

**No Bias** - Samples associated with this modification form are useable as reported. The conditions outlined in the modification form suggest that associated sample data are reliable as reported.

**APPENDIX B**  
**ENVIRONMENTAL RESOURCE SPECIALIST (ERS) REPORTS**



1135552

## Environmental Resource Specialist Response Report

Property Identification Number: AD-202036  
Physical Address: Cole Road  
Property Owner: Bruce Cole  
Date: September 23, 2009

Tetra Tech Inspection Team: Not Applicable

Tetra Tech ERS Response Team: Mark Stockwell, Jay Jordan and Tony Brown

Purpose: Clean up of Zonolite containing bags and contamination

Personal Protective Equipment (PPE): Nitrile gloves, polypropylene coveralls, and half-face dual cartridge HEPA filtered respirators

Background: Mr. Cole has not scheduled the TAPE inspection of his property thus far. However, he met with Tetra Tech's field technician, Tony Brown, in early September and mentioned that he had several bags of Zonolite insulation stored in a shed on his property that he wished to dispose of. Tony Brown contacted Tetra Tech's field team manager, Mark Stockwell, to find out if the Zonolite bags could be disposed of as an ERS procedure. Mark Stockwell met with Mr. Cole on September 10<sup>th</sup> and agreed to collect and properly dispose of the bags the next time the field team was in town.

9/23/09

1130 Tetra Tech's Mark Stockwell met with Bruce Cole to coordinate disposal of the Zonolite bags stored in a shed on the Cole property.

1430 Tetra Tech's Mark Stockwell, Tony Brown and Jay Jordan began staging equipment and supplies to begin the ERS cleanup.

1500 Tetra Tech arrived at the Cole residence to complete an ERS response. The shed containing the Zonolite bags is located on the east end of the Cole property adjacent to the river. The east shed door was inaccessible due to vegetation growth outside the door, so Bruce Cole's brother met the field team and removed the obstructions with a tractor.

1515 Tetra Tech's field technicians wore modified Type D personal protective gear with full length polypropylene coveralls and half face negative pressure respirators during the cleanup procedures. The field team observed 7 bags of Zonolite stored in the rafters at the east end of the shed. Three of the bags were damaged and Zonolite had leaked onto surfaces below.

1530 Tetra Tech finished placing each of the Zonolite bags into polyethylene "Asbestos" waste bags. The asbestos waste bags were double wrapped and sealed with duct tape. The field team was unable to clean debris from horizontal surfaces inside the shed without electricity to operate a HEPA vacuum.

1540 Tetra Tech left the Cole property and returned to the Troy DEQ field office. The asbestos waste bags were stored in Tetra Tech's waste storage shed. Debris was scheduled to be taken to the Lincoln County landfill the next day, September 24, 21009.

9/23/09

1100 Tetra Tech's field team manager, Mark Stockwell, met with Bruce Cole and instructed him that all of the Zonolite bags had been removed although his shed remains contaminated and should not be entered without precautions. Mark Stockwell recommended that Mr. Cole have a TAPE inspection completed at the property in order to document the contamination problem so that a future clean up could be completed. Mr. Cole was reluctant to schedule a TAPE inspection over concerns that "his property would be dug up", although he agreed to contact the Troy DEQ information center in the spring of 2010 to schedule an appointment.

#### PHOTO LOG

|         |  |
|---------|--|
| Photo 1 | Vermiculite contamination on east end floor of the shed            |
| Photo 2 | Vermiculite contamination on equipment in the shed                 |
| Photo 3 | Vermiculite contamination on equipment in the shed                 |
| Photo 4 | Vermiculite contamination on east end rafters in the shed          |
| Photo 5 | Vermiculite contamination on north workbench and floor of the shed |

|                     |           |
|---------------------|-----------|
| Total person hours: | 6.0 hours |
| Total miles:        | 39        |
| Equipment/Supplies: | \$50      |



## Environmental Resource Specialist Response Report

Property Identification Number: AD-202052  
Physical Address: 7321 HWY 2 West  
Property Owner: Mike & Susan Billingsley  
ERS Date: DEC. 13, 2010  
TAPE Inspection Team: NA  
Inspection Team personnel: Jay Jordan  
ERS Team personnel: Jay Jordan

Purpose: Confirm the presence/absence of vermiculite in Propane Fireplace

Personal Protective Equipment (PPE): Booties, Nitrile gloves

Monday, December 12, 2010

1430 – Tetra Tech's inspection technician arrived on site and met with the home owners to verify the presence of vermiculite in the propane fireplace. Mike Billingsley informed Tetra Tech that they never use the fireplace and that they used it for the first time the other day because their normal furnace had broke down. After using the back up propane fireplace Mr. Billingsley noticed vermiculite in and around the fake logs. He showed Tetra Tech the fireplace and it was confirmed that expanded vermiculite was located in the fire box adjacent to the decorative logs.

Tetra Tech used a HEPA vacuum to remove a minor amount of vermiculite that had fallen out of the fireplace and onto the floor. Tetra Tech's technician concluded that there was too much vermiculite to vacuum within the fireplace at that time, so the fireplace was sealed with plastic sheeting. Tetra Tech was unable to seal the hearth vents with duct tape since it would not stick effectively to the surrounding rock work, so the vents were removed and Tetra Tech placed plastic sheeting on the inside of the vents to block air flow.

Tetra Tech recommended to Mr. and Mrs. Billingsley that a vermiculite remediation project could be scheduled in the spring to clean the remaining material located within the fireplace. Tetra Tech also recommended that next summer would also be a good time to schedule a TAPE property inspection.

Total person hours: 1 hours

Equipment/Supplies: Poly sheeting, blue tape, HEPA vacuum use and bags, PPE, Nitrile gloves, etc.



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**APPENDIX C**  
**SUMMARY OF 2010 TAPE INVESTIGATION RESULTS**

DRAFT Remedial Investigation Report Addendum, 2010, for OU7 of the Libby Asbestos Superfund Site  
Appendix C - Summary of 2010 TAPE Investigation Results

| Description                                      | Parcel Count | Primary Building | Secondary Building | Use Area | Soil Samples | Soil Field Duplicate |
|--|--------------|------------------|--------------------|----------|--------------|----------------------|
| Total Inspections, 2007-2010                     | 1,272        |                  |                    |          |              |                      |
| Total Parcels                                    | 1,598        |                  |                    |          |              |                      |
| Total parcels outside of OU7                     | 51           |                  |                    |          |              |                      |
| Road and Alley Parcels                           | 316          |                  |                    |          |              |                      |
| 2010 - Access Granted                            | 972          |                  |                    |          |              |                      |
| 2010 - Access Limited                            | 10           |                  |                    |          |              |                      |
| 2010 - Access Denied                             | 27           |                  |                    |          |              |                      |
| 2010 TAPE Inspection                             | 33           | 24               | 25                 | 93       | 234          | 8                    |
| 2010 Inspections outside of OU7                  | 15           |                  |                    |          |              |                      |
| 2010 TAPE Inspection - No attics                 |              | 24               |                    |          |              |                      |
| 2007 TAPE Inspection - Inaccessible attics       |              | 1                |                    |          |              |                      |
| 2010 TAPE Inspection - VCI in attic              | 5            |                  |                    |          |              |                      |
| 2010 TAPE Inspection - VV in indoor living space | 6            |                  |                    |          |              |                      |
| 2010 TAPE Inspection - Common Use Areas          | 27           |                  |                    |          |              |                      |
| 2010 TAPE Inspection - Limited Use Areas         | 23           |                  |                    |          |              |                      |
| 2010 TAPE Inspection - Specific Use Areas        | 28           |                  |                    |          |              |                      |
| 2010 TAPE Inspection - Non-Use Areas             | 15           |                  |                    |          |              |                      |
| 2010 TAPE Inspection - Interior Soil             |              |                  |                    |          | 34           |                      |
| 2010 TAPE Inspection - ERS Action                | 10           |                  |                    |          |              |                      |

Notes:

ERS Environmental Resource Specialist  
OU7 Operable Unit 7  
VCI Vermiculite Containing Insulation  
VV Visible Vermiculite

**APPENDIX D**  
**REMOVAL STATISTICS**

DRAFT Remedial Investigation Report Addendum, 2010, for OU7 of the Libby Asbestos Superfund Site  
Appendix D - 2010 Removal Statistics

| AD Number | Survey Date | Soil Removed | Insulation Removed | Other Material | Notes |
|-----------|-------------|--------------|--------------------|----------------|-------|
| AD-200007 | 9/20/2010   | 0            | 15                 | 1.2            |       |
| AD-200041 | 10/5/2010   | 280          | 0                  | 0.5            |       |
| AD-200055 | 10/11/2010  | 220          | 0                  | 1.5            |       |
| AD-200074 | 11/11/2010  | 0            | 20                 | 3.8            |       |
| AD-200090 | 9/20/2010   | 0            | 35                 | 1.0            |       |
| AD-200241 | 10/6/2010   | 0            | 15                 | 0.4            |       |
| AD-200244 | 10/6/2010   | 0            | 20                 | 0.6            |       |
| AD-200264 | 10/18/2010  | 100          | 0                  | 100.5          |       |
| AD-200265 | 11/11/2010  | 370          | 10                 | 41.2           |       |
| AD-200277 | 9/20/2010   | 0            | 20                 | 3.5            |       |
| AD-200315 | 11/11/2010  | 950          | 0                  | 0.4            |       |
| AD-200316 | 10/15/2010  | 0            | 15                 | 1.0            |       |
| AD-200332 | 10/5/2010   | 90           | 0                  | 0.5            |       |
| AD-200334 | 10/14/2010  | 1,010        | 40                 | 2.5            |       |
| AD-200342 | 10/4/2010   | 13           | 15                 | 1.1            |       |
| AD-200343 | 9/13/2010   | 0            | 20                 | 0.8            |       |
| AD-200388 | 9/13/2010   | 0            | 20                 | 0.4            |       |
| AD-200417 | 9/17/2010   | 0            | 30                 | 1.6            |       |
| AD-200422 | 9/13/2010   | 0            | 20                 | 1.5            |       |
| AD-200438 | 9/17/2010   | 0            | 40                 | 1.2            |       |
| AD-200448 | 9/17/2010   | 0            | 9                  | 4.7            |       |
| AD-200456 | 11/11/2010  | 0            | 15                 | 3.4            |       |
| AD-200458 | 10/5/2010   | 0            | 30                 | 5.9            |       |
| AD-200472 | 10/5/2010   | 0            | 40                 | 1.0            |       |
| AD-200480 | 11/11/2010  | 860          | 0                  | 3.1            |       |
| AD-200507 | 9/28/2010   | 0            | 15                 | 4.5            |       |
| AD-200510 | 9/13/2010   | 0            | 20                 | 0.6            |       |
| AD-200512 | 9/28/2010   | 0            | 20                 | 7.6            |       |
| AD-200515 | 9/13/2010   | 0            | 20                 | 1.4            |       |
| AD-200518 | 9/20/2010   | 0            | 15                 | 5.6            |       |
| AD-200527 | 9/20/2010   | 0            | 10                 | 2.3            |       |
| AD-200533 | 10/6/2010   | 490          | 15                 | 4.0            |       |

DRAFT Remedial Investigation Report Addendum, 2010, for OU7 of the Libby Asbestos Superfund Site

Appendix D - 2010 Removal Statistics

| AD Number | Survey Date | Soil Removed | Insulation Removed | Other Material | Notes  |
|-----------|-------------|--------------|--------------------|----------------|--|
| AD-200538 | 9/17/2010   | 0            | 1                  | 1.3            | Moved 20 bags of vermiculite from basement     |
| AD-200564 | 9/20/2010   | 0            | 35                 | 1.9            |  |
| AD-200578 | 9/17/2010   | 0            | 40                 | 0.0            |  |
| AD-200600 | 10/5/2010   | 0            | 50                 | 1.0            |  |
| AD-200614 | 11/11/2010  | 1,480        | 0                  | 2.5            |  |
| AD-200616 | 11/11/2010  | 490          | 0                  | 1.0            |  |
| AD-200629 | 7/19/2010   | 0            | 118                | 6.5            |  |
| AD-200634 | 11/11/2010  | 460          | 20                 | 1.4            |  |
| AD-200654 | 9/13/2010   | 0            | 20                 | 4.9            |  |
| AD-200658 | 9/17/2010   | 0            | 10                 | 1.5            |  |
| AD-200659 | 9/20/2010   | 0            | 10                 | 3.4            |  |
| AD-200663 | 9/20/2010   | 0            | 10                 | 14.9           |  |
| AD-200689 | 11/11/2010  | 60           | 20                 | 3.1            |  |
| AD-200706 | 9/20/2010   | 0            | 20                 | 3.6            |  |
| AD-200711 | 9/13/2010   | 0            | 6                  | 0.9            |  |
| AD-200713 | ---         | ---          | ---                | ---            | ---  |
| AD-200723 | 10/5/2010   | 0            | 15                 | 1.7            |  |
| AD-200752 | 11/24/2010  | 140          | 0                  | 80.6           |  |
| AD-200759 | 11/11/2010  | 620          | 40                 | 1.5            |  |
| AD-200834 | 9/17/2010   | 0            | 20                 | 3.5            |  |
| AD-200839 | 10/18/2010  | 380          | 0                  | 730.0          |  |
| AD-200852 | 11/11/2010  | 750          | 0                  | 0.7            |  |
| AD-200865 | 11/11/2010  | 0            | 15                 | 3.2            |  |
| AD-200880 | 11/11/2010  | 460          | 0                  | 20.2           |  |
| AD-200925 | 9/20/2010   | 0            | 13                 | 1.0            |  |
| AD-200929 | 9/20/2010   | 0            | 22                 | 137.8          |  |
| AD-200960 | 9/20/2010   | 0            | 0                  | 0.0            | Work consisted of interior dust cleaning       |
| AD-200971 | 3/10/2011   | 110          | 0                  | 180.0          | Insulation was taken with demo building debris |
| AD-201041 | 9/28/2010   | 0            | 5                  | 2.2            |  |
| AD-201096 | 9/20/2010   | 0            | 22                 | 1.1            |  |
| AD-201102 | 11/11/2010  | 0            | 15                 | 4.2            |  |
| AD-201134 | 10/6/2010   | 0            | 20                 | 8.4            |  |
| AD-201154 | 9/13/2010   | 0            | 42                 | 0.0            |  |

DRAFT Remedial Investigation Report Addendum, 2010, for OU7 of the Libby Asbestos Superfund Site  
Appendix D - 2010 Removal Statistics

| AD Number | Survey Date | Soil Removed | Insulation Removed | Other Material | Notes                       |
|-----------|-------------|--------------|--------------------|----------------|-----------------------------|
| AD-201158 | 9/13/2010   | 0            | 18                 | 0.0            |                             |
| AD-201193 | 9/13/2010   | 0            | 8.5                | 1.1            |                             |
| AD-201495 | 10/5/2010   | 0            | 40                 | 1.5            |                             |
| AD-201526 | ---         | ---          | ---                | ---            | Included in AD-200334 waste |
| AD-201530 | 10/18/2010  | 230          | 0                  | 120.0          |                             |
| AD-202001 | 11/11/2010  | 1,280        | 20                 | 12.1           |                             |
| AD-202005 | 9/13/2010   | 0            | 10                 | 9.7            |                             |
| AD-202006 | 11/11/2010  | 370          | 0                  | 2.1            |                             |
| AD-202007 | 11/11/2010  | 2,442        | 0                  | 13.2           |                             |
| AD-202008 | 11/11/2010  | 60           | 0                  | 20.3           |                             |
| AD-202009 | 11/12/2010  | 30           | 0                  | 0.7            |                             |
| AD-202010 | 11/11/2010  | 300          | 10                 | 0.9            |                             |
| AD-202011 | 11/11/2010  | 860          | 0                  | 61.1           |                             |
| AD-202012 | 11/11/2010  | 11           | 50                 | 1.1            |                             |
| AD-202018 | 9/20/2010   | 0            | 10                 | 0.0            |                             |
| AD-202020 | 3/24/2011   | 1,274        | 20                 | 13.1           |                             |
| AD-202030 | ---         | ---          | ---                | ---            | ---                         |
| AD-202031 | 11/11/2010  | 910          | 0                  | 2.1            |                             |
| AD-202036 | 11/11/2010  | 50           | 0                  | 12.1           |                             |
| AD-202040 | 11/11/2010  | 230          | 0                  | 0.5            |                             |
| AD-202043 | 11/11/2010  | 140          | 0                  | 190.5          |                             |
| AD-202044 | ---         | ---          | ---                | ---            | ---                         |
| AD-202052 | ---         | ---          | ---                | ---            | ---                         |

Notes:

All values are presented in cubic yards (yd<sup>3</sup>)

--- = Paperwork had not yet been returned from U.S. Army Corps of Engineers (USACE) contractor for entry into table

**ATTACHMENT**

**Libby Asbestos Site, Troy Operable Unit 07 Residential/Commercial Cleanup  
Criteria, Specific Use Area Visible Vermiculite Action Level Technical  
Memorandum**



Libby Asbestos Site  
Troy Operable Unit 07  
Residential/Commercial Cleanup Criteria  
Specific Use Area Visible Vermiculite Action Level  
Technical Memorandum

## I. Introduction

On December 15, 2003, the United States Environmental Protection Agency (EPA) issued a draft final Action Level and Clearance Criteria Technical Memorandum for the Libby Asbestos Site Residential/Commercial Cleanup (herein referred to as the "CCM"). The CCM provides detailed information regarding action levels that have been and continue to be used for determining which properties or situations require an emergency response cleanup. The action levels identified in the CCM are as follows:

### Attics/Walls

- Visual confirmation of open, non-contained, or migrating vermiculite insulation.

### Interiors

- Visual confirmation of vermiculite in the indoor living space.
- Concentration of Libby Amphibole (LA) in an indoor dust sample greater than 5,000 LA structures per square centimeter using AHERA counting methods.

### Soils

- Visual confirmation of vermiculite or other vermiculite mine related materials in "specific use areas." A specific use area is defined as a garden, former garden, planter, or other defined area of a yard likely to receive significant use and generally not covered with grass.
- Concentration of LA in specific use areas or other yard soils by any analytical method greater than or equal to 1% Libby asbestos.

The CCM includes details to support the establishment of these action levels.

## II. Contaminant Exposure Routes for Libby OU4 versus Troy OU7

W.R. Grace maintained numerous vermiculite processing facilities within and near the town of Libby. These processing facilities provided a low-cost or even free source of LA-contaminated vermiculite for local residents. Given the availability of the vermiculite, many local residents in Libby acquired vermiculite materials for their gardens and yards and would transport the vermiculite by truck load to their properties. This availability resulted in the wide-spread distribution and use of LA-contaminated vermiculite observed in Libby today. Troy is located approximately 20 miles to the northwest of Libby. The probability of such widespread use of LA-contaminated vermiculite via the same distribution as observed in Libby (personal trucks) throughout Troy is believed to be low. However, vermiculite attic insulation has been noted throughout Troy Operable Unit (OU) 7. The attic insulation was distributed in bags thus easier to transport to Troy.

### III. Troy OU7 Investigations

In 2007, the Montana Department of Environmental Quality (DEQ) began inspections (both interior and exterior) of the residential and commercial areas of OU7. DEQ followed the basic protocol that had been established for OU4 with modifications based on "lessons learned" and updated data collection tools. The objective of the OU7 investigations is to identify those parcels that meet the emergency response cleanup criteria identified in the CCM.

One important fact to note is that not all vermiculite (commercially available or otherwise) contains LA. Thus, visual observation of vermiculite in soil does not necessarily confirm the presence of LA fibers. However, in OU4, through historical sampling and analysis a strong correlation between the visible confirmation of vermiculite in soil and the presence of LA fibers in soil samples has been observed. Given this experience, DEQ did not include the collection of soil samples from specific use areas that contained visible vermiculite initially in OU7. DEQ did semi-quantify the presence of visible vermiculite through a 30-point inspection and categorized the visible observations as none, low, intermediate, or high (CDM-Libby-06).

At the conclusion of the 2007 field season, anecdotal evidence reported to the field teams by property owners suggested that vermiculite observed in the specific use areas in OU7 did not come from the "local piles" or other sources in Libby. The property owners in OU7 reported the recent purchase of planting materials containing vermiculite from local hardware stores.

Based on this information, the OU7 sampling protocol changed in 2008 to include the collection of a soil sample from specific use areas and a description of the visible vermiculite. The field teams also returned to those parcels inspected in 2007 and collected a soil sample from specific use areas that had visible vermiculite. Thus, several lines of evidence could be considered when reviewing data from the exterior portion of a parcel potentially eligible for cleanup.

### IV. Troy Results

In 2008, 392 soil samples were collected from specific use areas with visible vermiculite in OU7. The results of those samples along with pertinent parcel information (e.g., use area description, visible vermiculite counts, vermiculite descriptions, etc.) are provided in the attached spread sheet. Some notable statistics are in the following table.

| Visible Vermiculite Description                | # of Bin A/B1 | # of Bin B2 | Total # in Subset (description category) |
|--|---------------|-------------|--|
| Expanded Homeowner Purchase                    | 1             | 0           | 1  |
| Expanded Unknown Source                        | 114           | 0           | 114                                      |
| Unexpanded/Unexpanded Unknown Source           | 98            | 2           | 100                                      |
| Unexpanded/Potting soil mix Homeowner purchase | 170           | 1           | 171                                      |
| Unknown  | 1             | 0           | 1  |

The Visible Vermiculite Description is based on the inspection team's discussions with the property owners and their own observations. The "Bin" categories allow for ease of grouping of PLM-VE soil analytical results. Bin A is non-detect, Bin B1 is "trace" or less than 0.2% LA, and Bin B2 is between 0.2 and 1% LA by weight. Bin C are those soils with LA greater than 1% by weight. Please note there are no Bin C results from the specific use areas with visible vermiculite in OU7.

In summary, out of 392 soil samples collected from specific use areas with visible vermiculite, only three have LA fibers detected above 0.2%.

#### V. Conclusions

The following conclusions can be drawn from the attached spread sheet and other evidence detailed in this memorandum:

- The majority of vermiculite present in soil in OU7 does not contain LA and did not come from the "local piles" in Libby;
- The vast majority of the 392 soil samples were semi-quantitatively categorized with very few "low" visible observations pursuant to the protocols in CDM-Libby-06. Therefore, the samples and use areas represented in the table do not include any "large piles of pure LA;" and
- There were five samples collected described as "expanded leaking from building" and only one of those had a Bin B2 (between 0.2 and 1% LA by weight) result.

#### VI. Recommendations

DEQ offers the following recommendations based on the above discussion:

- Continue to collect soil samples from all use areas;
- Continue to semi-quantify the presence of visible vermiculite in all use areas; and
- Do not apply the action level of "visual confirmation of vermiculite or other vermiculite mine related materials" in "specific use areas" in OU7 as an independent cleanup criterion. Instead, consider several lines of evidence and criteria for cleanup decisions, including, but not limited to, the presence of visible vermiculite in exterior use areas.